JANUARY 1985

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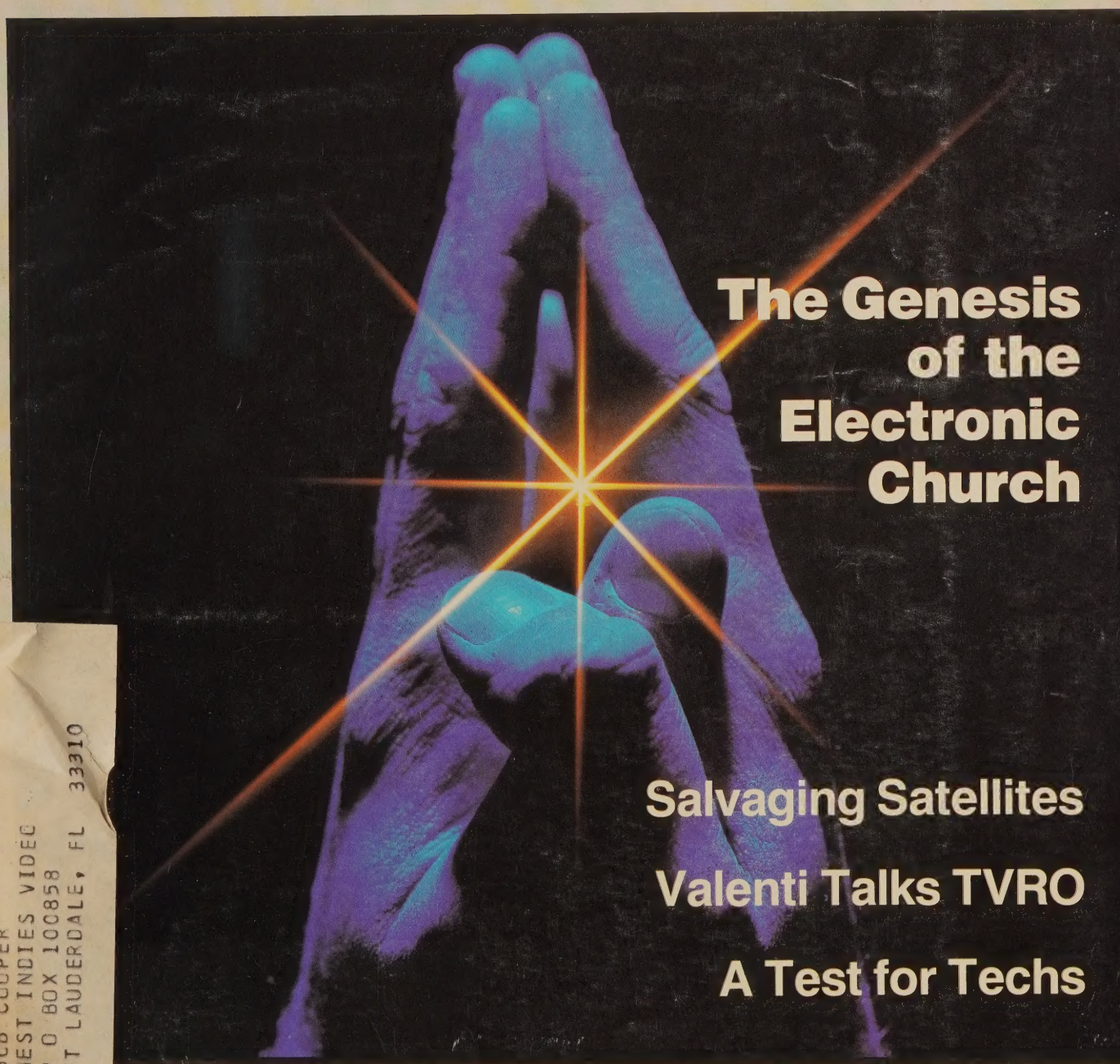

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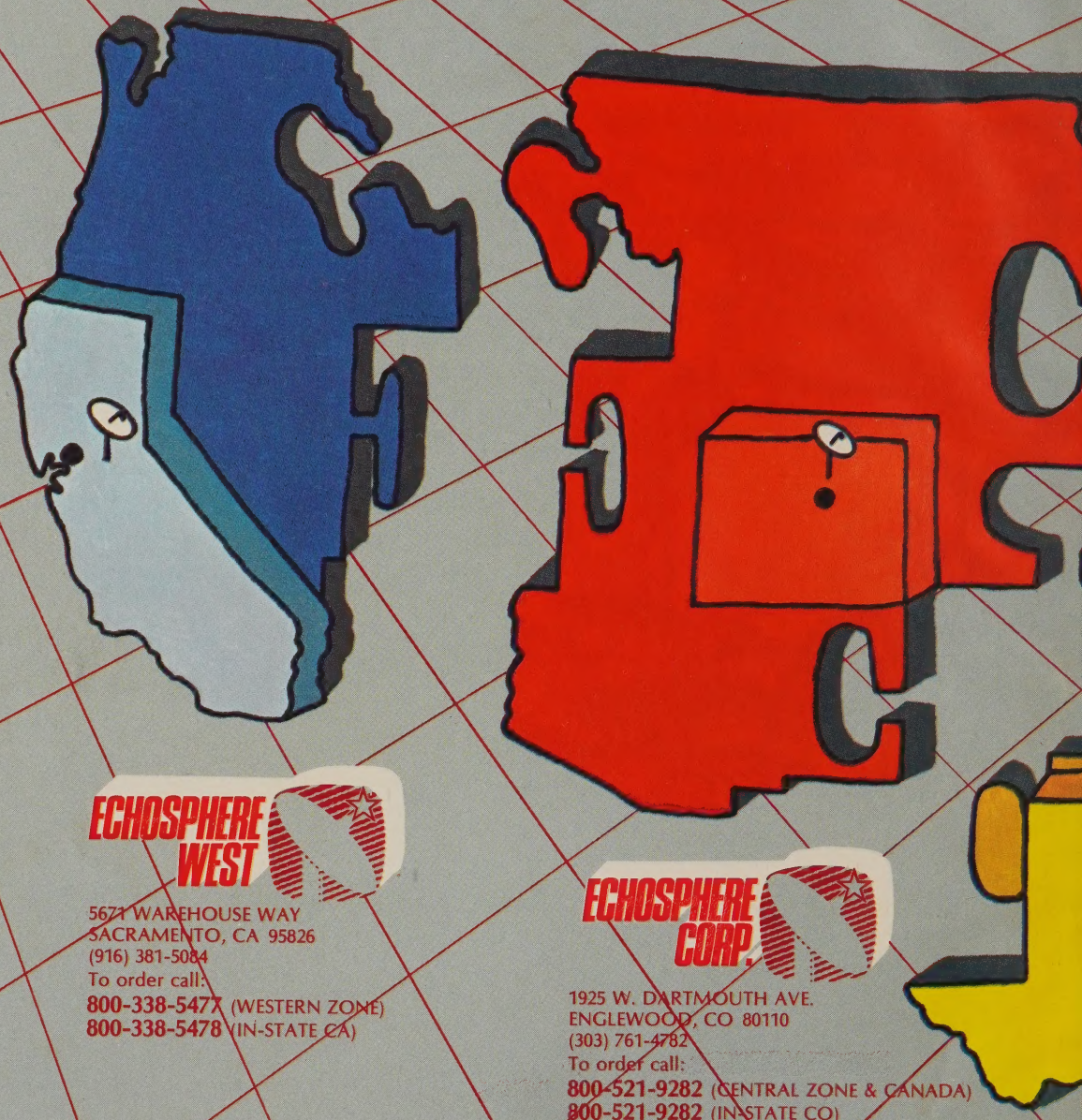

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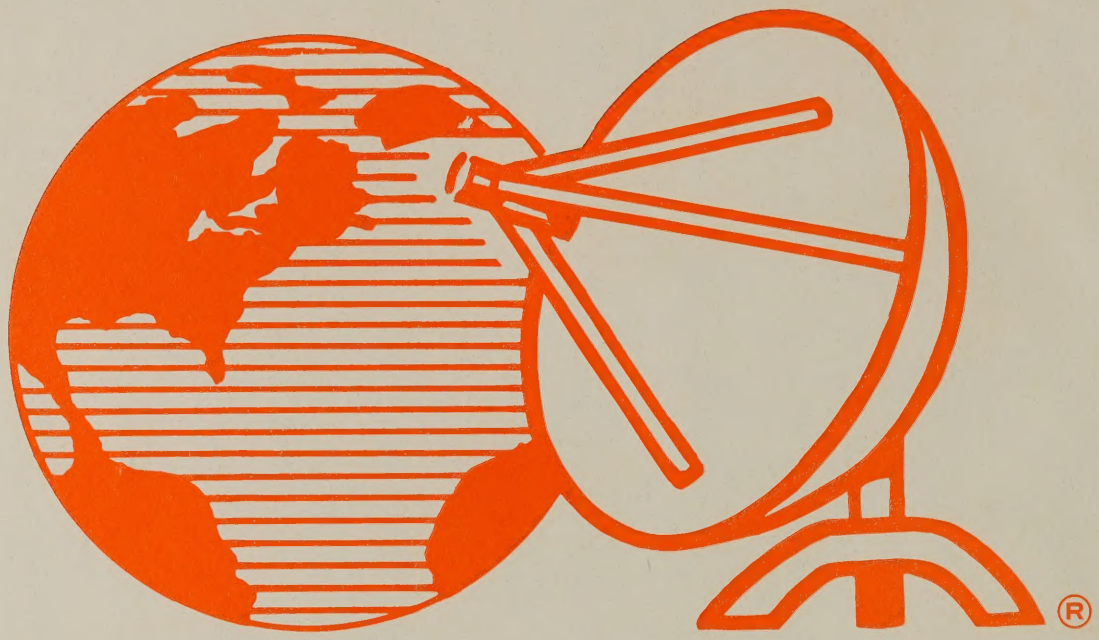

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January 1985
Vol. 2, No. 5

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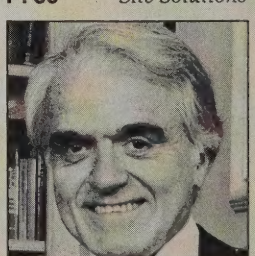

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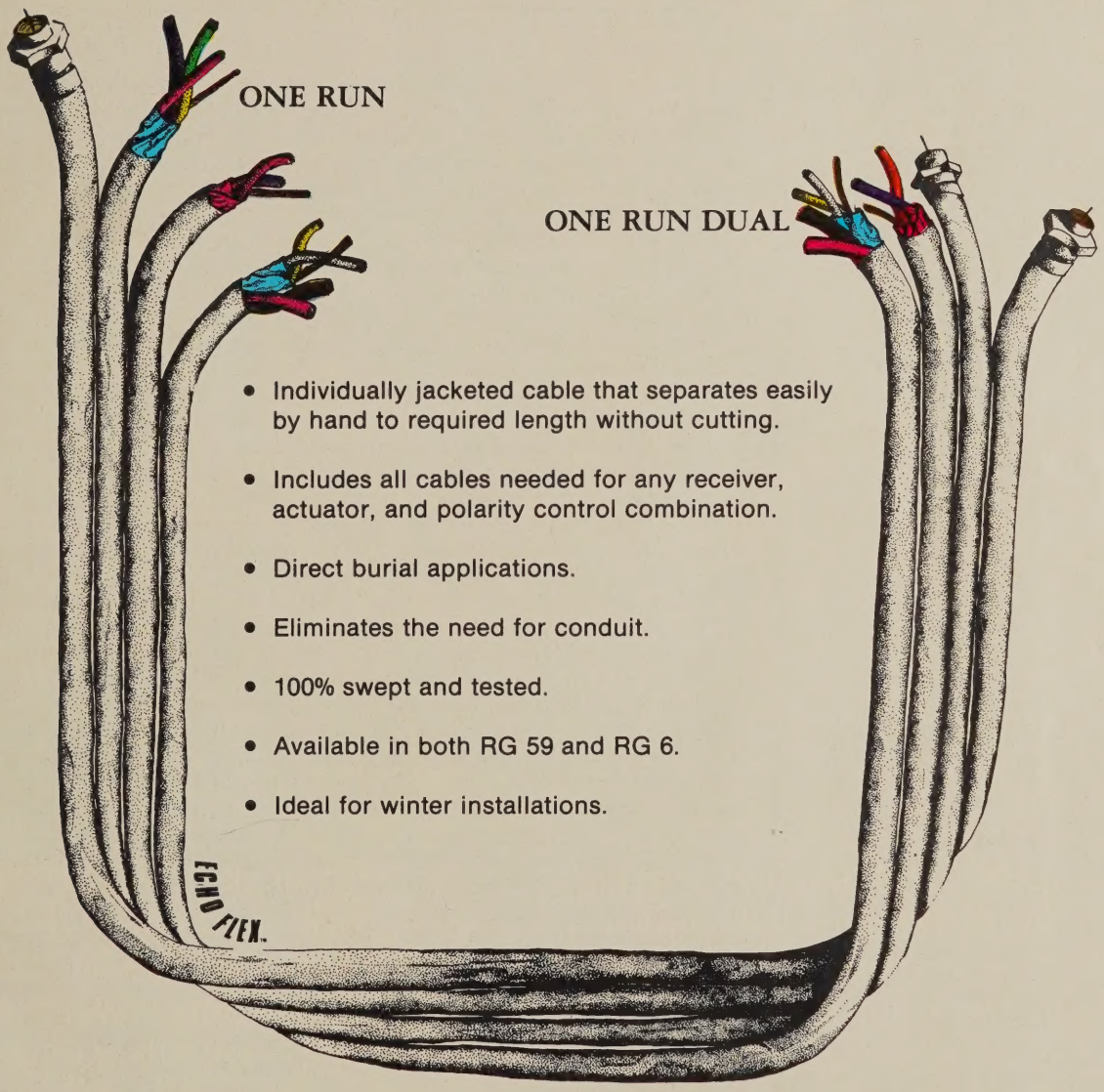

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Vol. 2 January 1985 No. 5

Pirates No More

The days of our innocence were filled with guilt.

It used to be such fun to be a video pirate. Now that private reception of satellite television by individuals has the official stamp of legality from the United States government, we have reached the end of the piracy era. The skull and crossbones days may be gone forever, and with them goes the excitement of doing something we really weren't supposed to do. We were naughty, but we hadn't broken any rules.

Logically, we all knew we were involved in an industry that was morally correct, but cable operators and programers were not convinced. They called us pirates, but they never could catch us. That gave us the fine feeling that we were somehow beating the system. Those fortunate enough to be able to claim football tickets as entertainment write-offs on their taxes must have an idea of that feeling.

As much as we always said we were willing to pay for programing, there was always that great feeling of getting something for nothing. Let's not confuse this with cheating. Nobody asked us for a dime, and we did make a substantial investment in hardware. Also, there was usually no small amount of work required to find exactly what we wanted to watch. The challenge of finding a championship boxing match, knowing that it would be unscrambled on some transponder by the second round, may disappear with the sophistication of scrambling methods. Having HBO executives in a quandary over what to do about our little industry (ignore it? exploit it? crush it?) is a pleasure that future generations of bird watchers will not appreciate.

As satellite television becomes accepted in the mainstream of American life, it more and more will resemble conventional television. Before long, anything on satellite that consumers don't directly pay for will have commercials at regular intervals. Gone will be the days when programers air footage not intended for public consumption. Kiss good-bye the news warm-up feeds when the reporter is applying a last dash of mascara, predicting the presidential election results a day in advance, or hollering obscenities at the production crew. Forget about the extra analysis heard during commercials of basketball games when the announcers are saying what they *really* think of the coach's strategy. It's enough to make a pirate shed crocodile tears.

In showrooms, dealers no longer shuffle their feet and talk fast when customers raise the tough legal questions. Customers now are beginning to call the shots. When they walk into the shop, they say they've seen Dan Rather talk about dishes and they've read in the newspaper that some new law makes satellite television OK.

The end of all these pirate games is inevitable. The high seas of the airwaves are just becoming too crowded. Who ever heard of a band of pirates with a million members, anyway? With the last gasp of the piracy era, however, comes a long-awaited sigh of relief from all the honest buccaneers who have invested their life's work and savings into home TVRO.

Ron Rudolph

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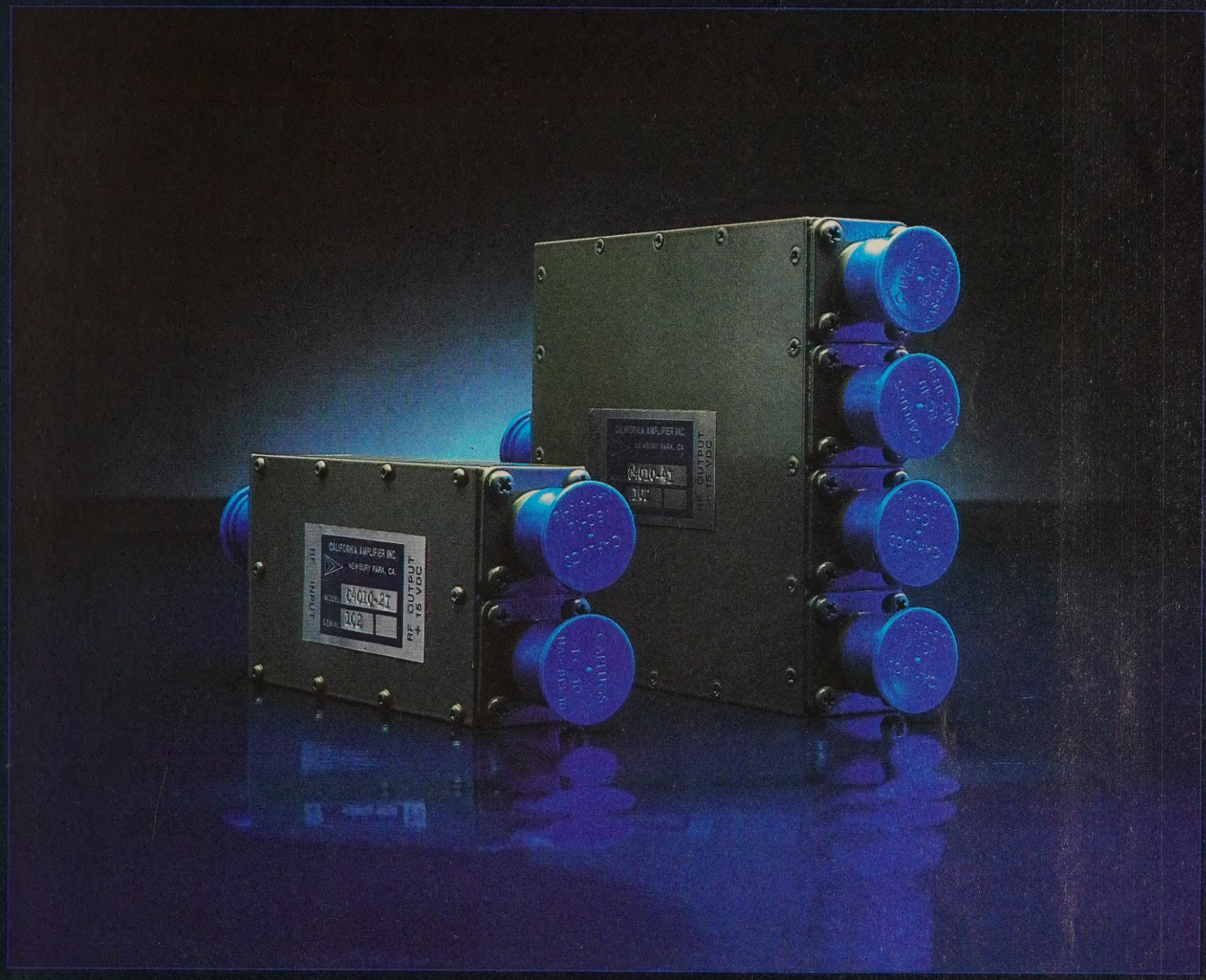

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Letters to the Editor

Nerds on Ice

Thanks for the article "Taking the Chill Out of Winter Installation" (November issue, page 81). My husband and I have been satellite dealers/installers for more than two years. As "weathered" installers, your illustration with the caption, "Winter weather won't cramp this dealer's style," gave us a good chuckle. It is now exhibited on our refrigerator.

It's good to know someone out there understands the plight of the installer. After learning the hard way—through a series of frozen fingers and cold, wet feet—I am preparing for this winter with new boots and gloves.

There was one thing you did forget: an extra set of batteries for the walkie-talkies (unless you enjoy the challenge of interpreting the choppy language of your partner while you stand in the freezing cold).

The only other problem with the article is that the poor satellite installer looks like a nerd going somewhere to happen. You should only hope we don't take revenge.

Laura S. Adams
c/o The Satellite Doctor
Lexington, North Carolina

On Whose Dime?

This pertains to most distributors and manufacturers. I think it's wrong for distributors and manufacturers to furnish a toll-free number to order parts when, if the equipment is received and does not operate, the dealer has to use a pay number to request a repair authorization or other technical information. Also, I think manufacturers should be required to reimburse postage on defective equipment.

Richard Spitter
Quality Satellite TV Systems
Cedar Creek, Texas

Entertainment Hungry

You are to be congratulated for your excellent publication. We subscribe to six different trade journals and *Satellite DEALER* receives the greatest readership and use of all. I make copies every month of appropriate pages to distribute to our sales staff, installers, and service manager.

We offer southern Nevada customers a wide range of system options from economy to deluxe. Our best selling system is the 10-foot Paracom perforated steel antenna with a Gillaspie 9600 receiver and an MTI actuator. We also carry Birdview dual receiver systems, Wilson antennas, and Drake receivers.

We are going head to head with the cable company in Las Vegas, which charges $68.95 per month for its top package, which includes five premium channels. This extremely high price, combined with relatively poor service in many parts of town, has pushed a lot of customers our way. The competition from other dealers has also been intense in this entertainment-hungry community.

Charles R. Abbott
Satellite Scanners
Las Vegas, Nevada

Editor's Note: *We appreciate the kind words, but there are laws against making copies of copyrighted publications. It sounds like your sales staff, installers, and service manager, however, would all qualify for free subscriptions to* Satellite DEALER. *Just take the time to fill out the enclosed subscription card and you'll save on your Xerox paper bill.*

Money ASAP

In the November issue of *Satellite DEALER*, you printed an article titled "Protect and Profit." I feel that I must point out a few mistakes and ask that you print a correction.

1) You indicated that ASAP was a homeowners' insurance company. ASAP is not an insurance company, and our primary business is extended service contracts on appliances, TVs, and satellite systems. At the time you did the interview, we also had a homeowners' extended service program.

2) Our suggested retail price on the five-year service contract for satellite TV equipment is $413, not $400. The price for the two-year contract is $206, not $200.

3) The 800 number is primarily for the customer to call for service. The

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dealer may call this number if the customer calls him first for service.

Thank you for your consideration.

Dean Robison
ASAP
Hutchinson, Kansas

Editor's Note: *When we contacted ASAP, we were told that price schedules may vary slightly depending upon the agent dealt with. Interested dealers should call ASAP directly at (316) 721-4255.*

The Other Side of Loyalty

I was very disturbed after reading your article, "What Price Loyalty?" on page 157 in your November issue. While I agree it is very important for distributors to have in-house repairs, there is another side to the story.

What are distributors to do about dealers who rush into this industry without taking the time to learn anything about the equipment that is used and how it works? I have seen too many pieces of equipment leave in perfect working order, only to be returned damaged through dealer negligence. Granted, some equipment fails, but if a distributor carries top-quality brands of equipment, instances of failure are few and far between.

The only possible solution that I can see is to have dealers become licensed by the state in which they operate. This would entail a training program and written exam.

In closing, I would like to direct a statement to Mr. Don Griener. After installing hundreds of actuators, I have determined that there are only two ways to bend an arm: either by running over it on the way to the location, or by extending the arm too far to the east. In other terms, negligence!

Pat Gear
SII
Beaumont, Texas

Comments on the editorial content of *Satellite DEALER* magazine should be addressed to: Letters to the Editor, *Satellite DEALER*, Box 2700, Hailey, ID 83333. Unless otherwise stipulated such submission constitutes agreement to publication in this column, with such editing as is deemed necessary by the staff of *Satellite DEALER*. Opinions expressed in these letters are not necessarily those of *Satellite DEALER*.

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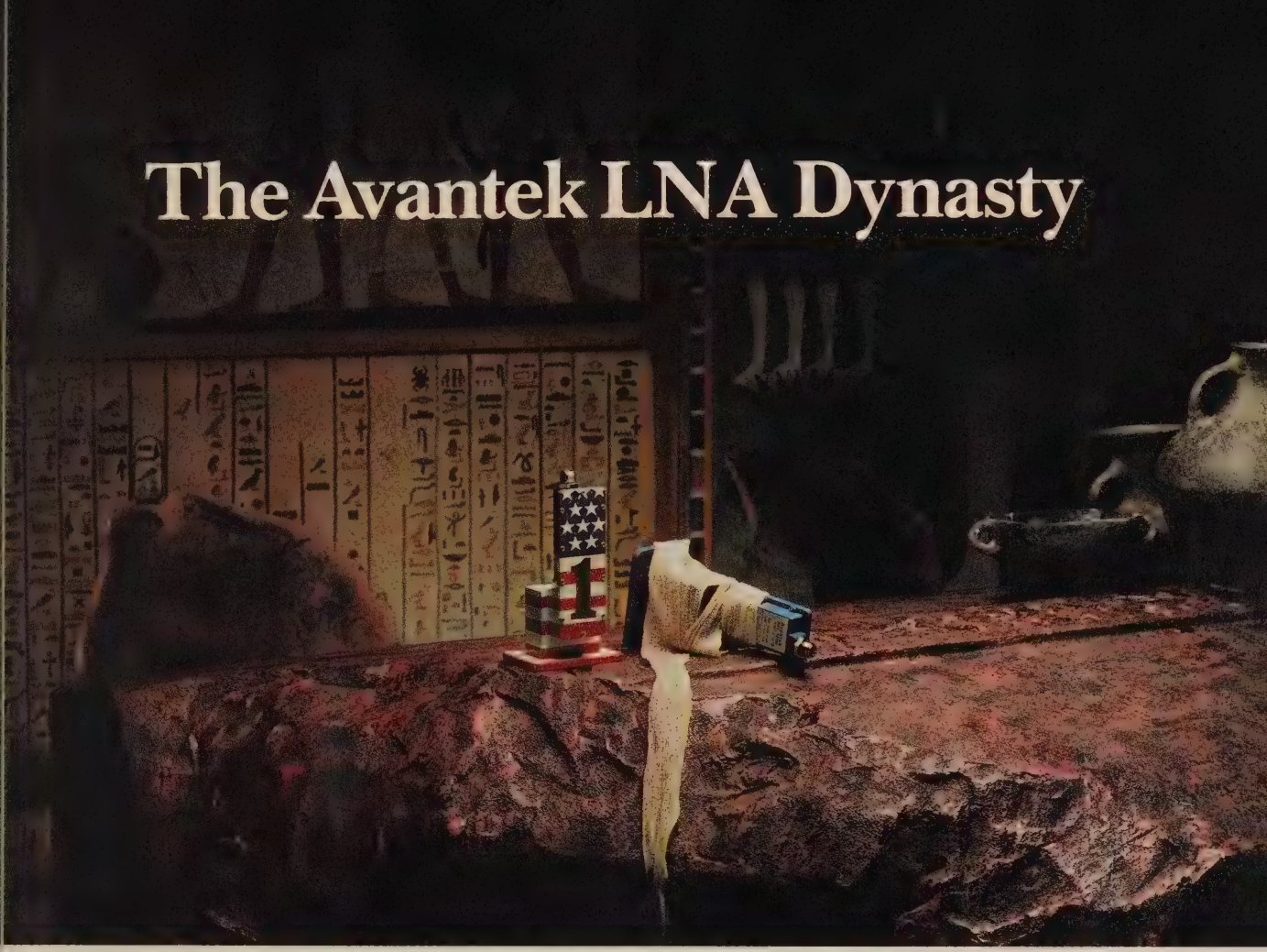

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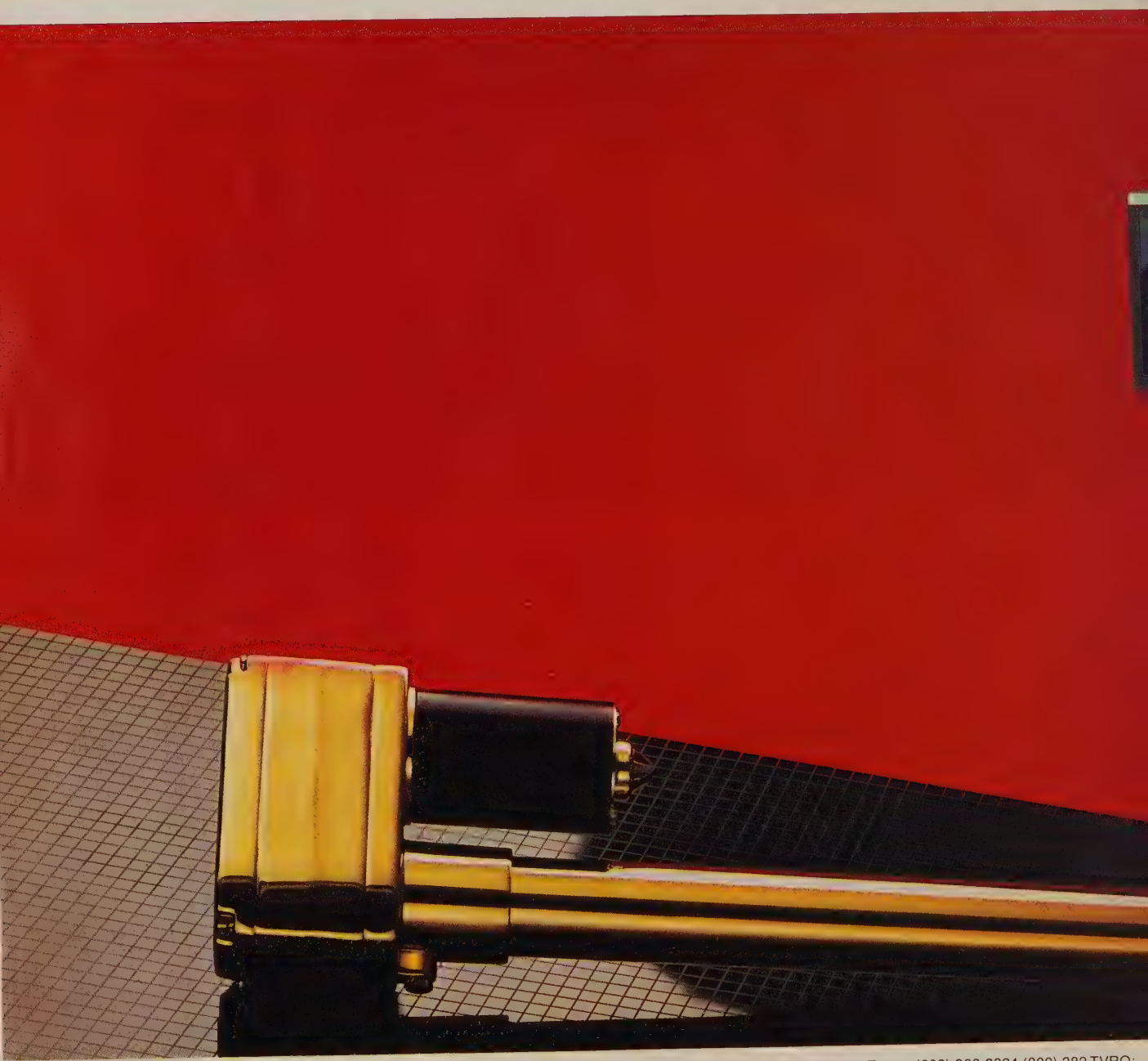

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In the Beaver State with Ed Volkers

There's nothing sweeter than satellite TV in Sweet Home, Oregon.

BY BRAD NOTTINGHAM

ED VOLKERS FIRST SET EYES ON Sweet Home, Oregon, in 1959. Like other young men who came to this sportsman's town in the sprawling timber country of Linn County, Volkers found work in the lumber industry. He raised a family there, and hunted and fished in the backcountry. One day, his friends at the plywood mill started talking about CB radios.

"People were starting to buy them, but nobody was installing them correctly; they were really lousing it up," says Volkers. "I went around and took about a dozen orders at the plywood mill. They paid me in advance, because I had to make a $1,500 purchase to start my dealership. When the CBs first started rolling in, I installed them at cost, and the guys threw in a little extra for my labor. I reinvested my profits, and it got bigger and bigger—and pretty soon I was busy."

As bright as his future looked, Volkers had inhaled a lot of smoke and sawdust during his years in the mill. A severe allergy struck his lungs, the CB craze passed, and suddenly, "I had nothing to do but read," remembers Volkers.

In the course of his reading, however, Volkers discovered satellite TV. Receiving video signals from satellites hovering 22,300 miles overhead intrigued him, especially since TV reception in the mountainous country surrounding Sweet Home is poor at best. The more Volkers thought about it, the more he thought he should become a satellite dealer.

"The weather gets a little nasty around here in the winter, and many elderly people become shut-ins," says Volkers. "When I first started ordering books and magazines, I thought there was no way I could handle satellite TV equipment—it was way over my head. I didn't realize it then, but my biggest asset was my enthusiasm in digging further into the TVRO technology.

"All of a sudden it started making sense. So I purchased my first demo system—and it took me two weeks to set it up!"

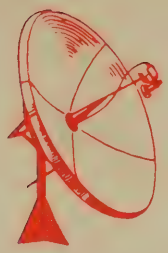
That sums up the humble beginnings of VideoTrak, Volkers's Sweet Home dealership. What once took him two weeks to do now takes him just three hours. Today, as a dealer for SRC, a Wilsonville, Oregon, distributor and manufacturer, Volkers is as happy as ever. VideoTrak carries the complete SRC line, which includes Automation Techniques, Luxor, KLM, and Toki equipment. "Rick Knight at SRC bends over backwards to help his dealers," says Volkers.

David Nice

Volkers keeps so busy he "hasn't had three square meals a day in six months."

Volkers displays his equipment in Frannie's furniture store. He calls his service truck a "driving billboard," and it is often seen towing one of two trailers Volkers has designed for site surveys, demonstrations, and for carting new equipment home from Wilsonville or Portland. "My service truck has a canopy, and two model satellite antennas that I made out of snow sleds are mounted up on the roof," says Volkers. "I even won a ribbon for it last July in Sweet Home's annual sportsmen's holiday parade. I put my youngest boy's baseball team in the trailer, which we had decorated in red, white, and blue paper. We had fun."

Volkers has brightened the cold, dreary winter evenings of many Sweet Home residents with satellite TV pro-



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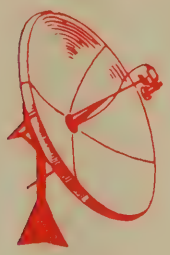

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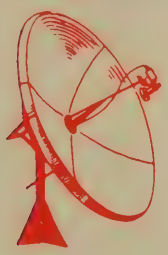

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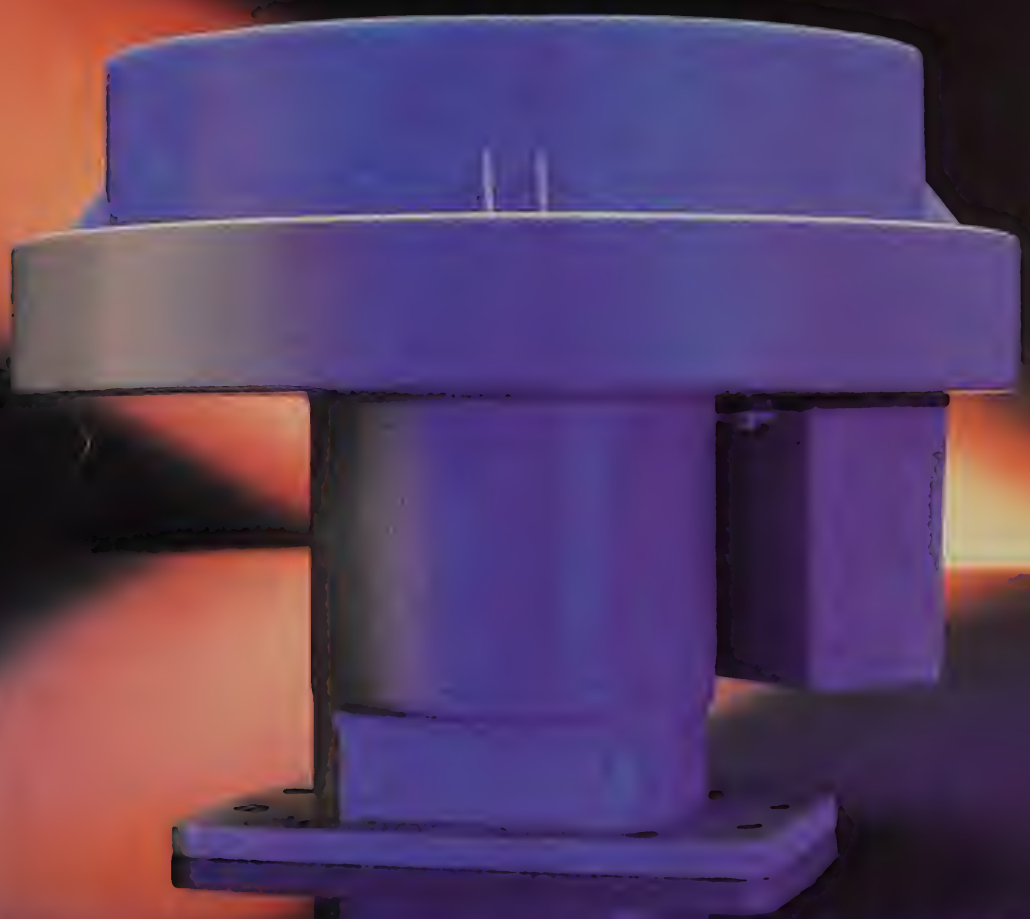

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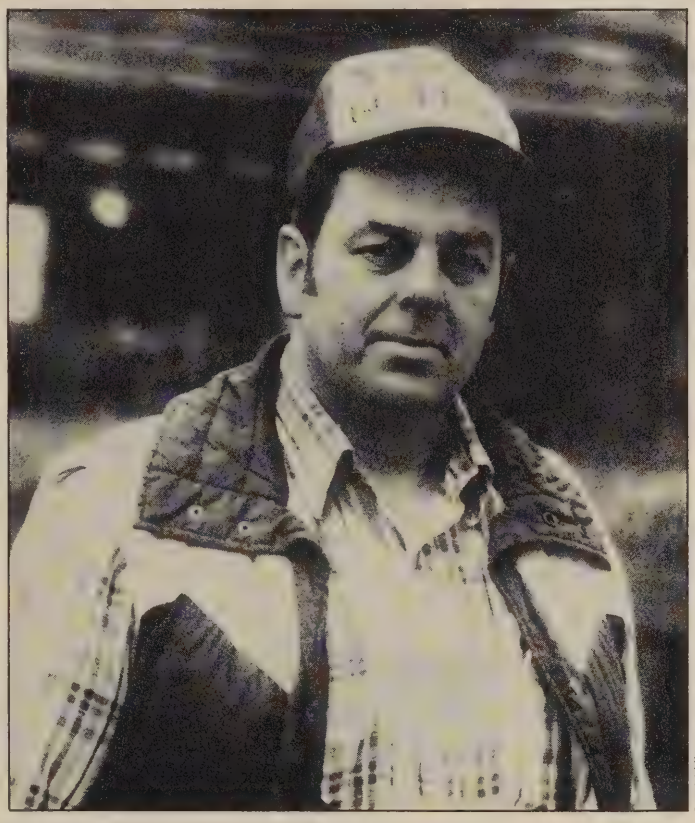
graming. As is often the case in small towns, his customers respond by treating him as well as he treats them. "Nine out of 10 of my customers are retired elderly people," he says, "and they put a lot of trust in me. They're making a big purchase—it's expensive. I have an ongoing responsibility to them. If a customer has the least little problem or question, I jump right on it. If I tell them I'll be there in 15 minutes, I'm there in 15 minutes. I've been involved in electronics installation and repair work for 14 years. I've run for city council, I've been a reserve police officer and an ambulance driver, and I've installed and repaired outboard motors at a boat shop. Everybody in this town knows me.

"I have a friendly, social relationship with my customers. They are always inviting me over for coffee or lunch, or they insist that I stop by and visit. One elderly lady baked a whole apple pie for me—can you believe that?"

Volkers is often the voice on radio station KFIR's live "Country Store" series, a community sounding board that sometimes turns to the topic of satellite TV. "You never know what somebody is going to ask you about satellite television, and you've got to be ready with an answer," says Volkers. "It all started when I'd go to the station to do my radio ad. Then I'd get stuck there, reading from the community mail bag or answering questions about satellite TV."



David Nice

Volkers says learning and doing "just come natural."

No Charge

Volkers pre-wires all hand-crank installations for actuators, "just in case," and he always furnishes a full year's subscription to a programing guide. His job frequently calls upon his ability as a diagnostician. "Last October, I had a customer who had a defective tuner on his television set," says Volkers. "When I tried to tell him, he wouldn't hear of it. So I proceeded to substitute his TVRO components, even though I had determined his tuner wasn't making contact on channel 3. Finally, I jiggled that tuner knob and boy, the picture just popped right back on the screen. After two hours of swapping components and putting it all back the way it was, I asked him if he was happy. When he said yes, I told him that he owed me nothing—the service call was on me. I did tell him to listen to me the next time, though, and he was apologetic all over the place with offers to pay me."

Volkers gives customers who pay cash a price break because he says it saves him paperwork. Relatively few of his customers take advantage of financing assistance to make $70 to $80 monthly payments. Financial concerns aside, Volkers flat-out gets a kick out of making people happy.

"Basically, people just can't believe that we can get this kind of reception in the mountains," he says. "One customer listened—*just listened*—to his television set for 25 years because he never could get a picture. Now, with a satellite antenna, he says he doesn't get much sleep.

"So many customers are still new to satellite TV and cannot comprehend all of the channels they get. They're so happy that their neighbors get curious, and then I get more requests for demonstrations. Now my kids think I'm working too hard, though, and putting in too many hours. Maybe it's true—seems like I haven't had three square meals a day in six months."

Volkers has staged Friday-night demonstrations for the local Elks Lodge. He impressed the Elks by downlinking sports to a large-screen TV. "They really got excited about it—they'd never seen satellite TV on a big screen like that before. I had a lot of people call me expressing their appreciation for that service," he remembers, adding that he appreciated getting a chance to mix it up a bit with his friends. "Yep, I pretty well had the run of the club that night."

Volkers, who says he did not turn a dime of profit during his first six months as a satellite dealer, does not take success for granted. His emphasis on personal service, combined with a largely self-taught skill in electronics repair, has resulted in a busy and rewarding TVRO business, but when asked about his success, he hedges. "I've asked myself that, and everybody else asks me that," says the unpretentious dealer. "I guess learning and doing comes natural for me. I overhauled my first automobile when I was only 13 with a monkey wrench, wrecking bar, a screwdriver, and a pair of pliers—in the dark. Now I'm repairing downconverters.

"Most of all, though, I like being my own boss, and as I say in my radio announcements, I not only sell and service good equipment, I furnish what is most important—a good picture."

VideoTrak is managed by a long-term community figure who cares about his customers, and there's little doubt that for those Oregonians who purchased TVROs from the Sweet Home dealership, Ed Volkers has made satellite TV even sweeter. □

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tribution Center Established **Distribution Center To Be Established

A New Deal for Dealers

SPACE's "other" board of directors needs your input, says the president of Visalli Satellite Systems.

BY ANNA VISALLI

THE FORMATION OF THE SPACE dealer board of directors, of which I am a member, is a great step forward for our trade association. SPACE's dealer board is of vital importance to the industry because dealers now can take more responsibility in shaping the future of the industry. A board of directors made up mostly of manufacturers and distributors gave the impression to members and nonmembers of SPACE that our trade association represented the concerns only of bigger corporations, not the concerns of the small-business man. Now, with a separate dealer board composed of men and women from all over the country, dealers are assured better representation of their needs.

Dealers may seem to represent only a small fraction of the marketplace. But collectively, dealers are the lifeblood of the TVRO industry. Before the dealer board was formed, SPACE heard the dealer's voice only through manufacturer and distributor members. Though SPACE asked dealers to become members, dealers for a long time felt they were not represented as well as they should be.

This has changed, however, with the establishment of a 24-member dealer board. Now we are in a position to assess the real problems facing today's dealers, and we can make progress toward solving those problems. Together we can share experiences, make priorities, and move toward positive change. This will be especially true once we have increased dealer membership to SPACE. Our number one priority is to increase dealer membership. I believe we should establish a minimum goal of 5,000 dealer members in order to be a powerful force. To attain that membership, we will have to develop the kind of activities that will make dealers want to become members of SPACE.

Visalli says the dealer board will address the concerns of small businesses.

Because of SPACE's lobbying effort, the Cable Communications Policy Act of 1984, with satellite viewing rights legislation, was signed by President Reagan in October. Finally, the cloud of illegality no longer hovers above our industry. Though the bill makes viewing unencrypted satellite signals legal, we must remember that other lobbying battles lie ahead. The issue of TVRO owners subscribing to the encrypted programing of premium services is an issue our trade association will need our support for in the future. Dealers can do their part by enlisting other dealers and consumers as members of SPACE.

What the Board Will Do for You

We must address the issues of dealer education, SPACE certification, and licensing. As the industry continues to grow, these are issues of increasing concern. Through my part and through the work of others, the

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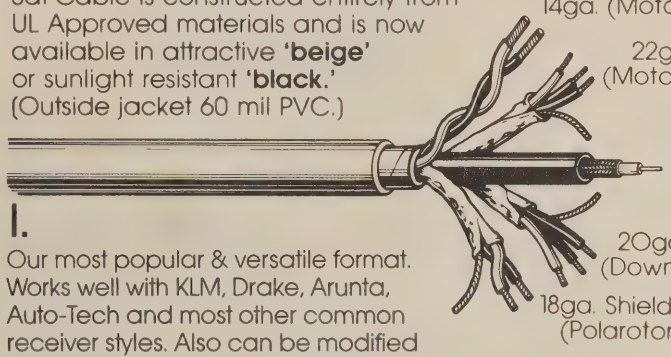

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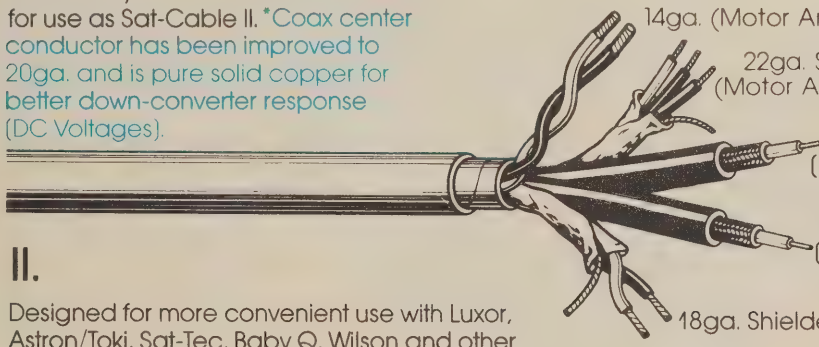
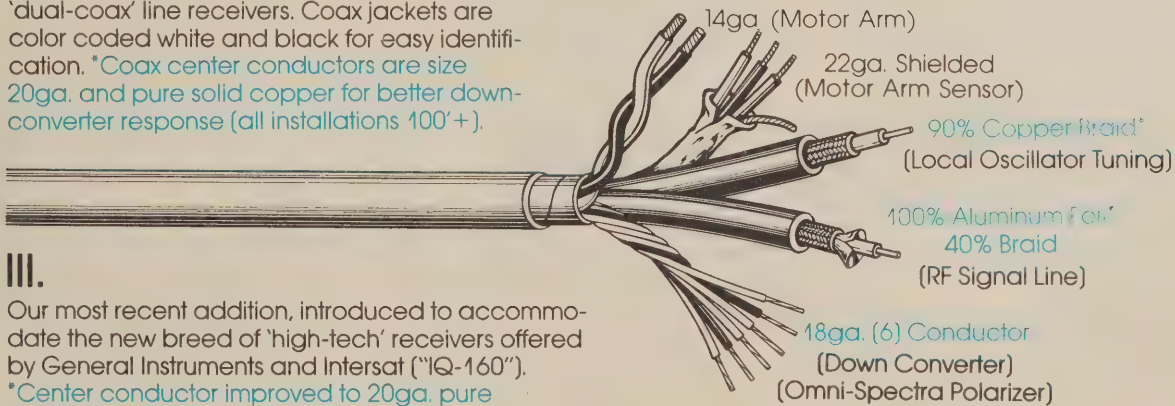


II.

Designed for more convenient use with Luxor, Astron/Toki, Sat-Tec, Baby Q, Wilson and other 'dual-coax' line receivers. Coax jackets are color coded white and black for easy identification. *Coax center conductors are size 20ga. and pure solid copper for better down-converter response (all installations 100'+).



III.

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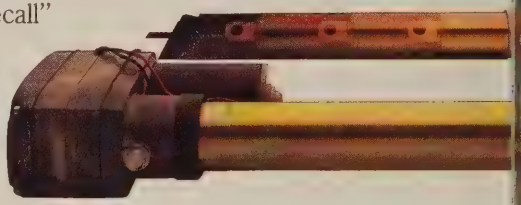

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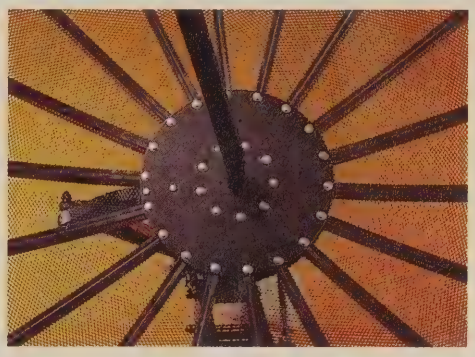

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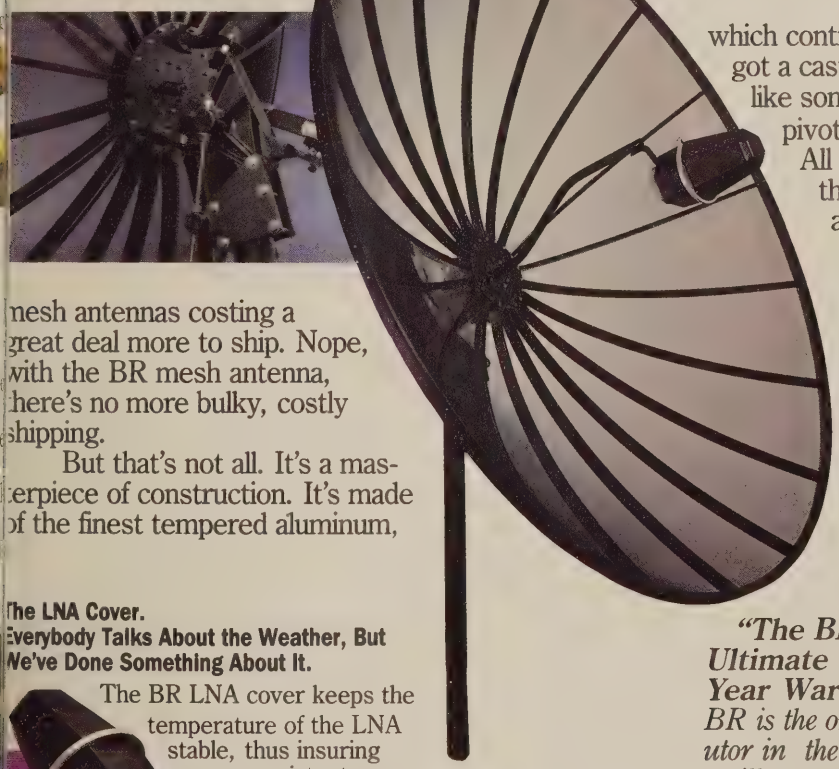

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The total dead weight was 4,522 pounds. Total deflection under load was 1 inch and when the whole ordeal was over, the hub plate was only .45" closer to the floor than before.

Last year, during a "destruction test," we dropped 5,200 pounds of steel stock on the same antenna; so we weren't really surprised when this stunt worked.

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dealer board hopes that education will become better, SPACE certification programs will become practical and more meaningful, and dealer licensing will become less of an arbitrary decision made by government agencies.

Having been in this industry for five years in urban New Jersey, my husband and I have fought municipal boards and have had to compromise on a lot of local zoning ordinances. Before getting into satellite television, I was in real estate. I was able to apply my background in real estate to successfully fight several major zoning laws in one of the most heavily cable-franchised states in the country. We have worked at educating members of zoning boards about the nature and benefits of home earth stations, and have found solutions to problems that arose from antiquated and arbitrary regulations. We know that dealers all over the country have had similar experiences, and perhaps now, through SPACE, we can find more legal remedies to zoning problems.

Visalli Satellite has grown from a two-person operation to a company of 12, and every year our business has ended up in the black, not in the red.

'There is plenty of room in this industry for more dealers. But because the TVRO industry is young, dealers must organize.'

There is plenty of room in this industry for new dealers. But because the TVRO industry is young and without any real rules, dealers must organize. What the industry offers to individuals is the true American dream.

Through efforts of dealer members, the dealer board will be more inclined to address the needs of the small-business man. One of the more confusing problems many dealers confront arises from dealer-distributor disputes. When equipment fails, dealers are often told that it is a manufacturer-related problem, and the dealer is then left to deal with the manufacturer on his own. This is one area of concern the dealer board will try to address with SPACE's main board of directors.

Time will tell how effective the dealer board will be. Members of the dealer board will make an effort at trade shows to get feedback for policy-making decisions. The dealer board must continually hear from members and non-members alike, however. We all must work to establish better communications in order to be effective on local, regional, and national levels as a strong trade association. □

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The Dealer Certification Program

By educating new installers, SPACE hopes to create a national alternative to local licensing requirements.

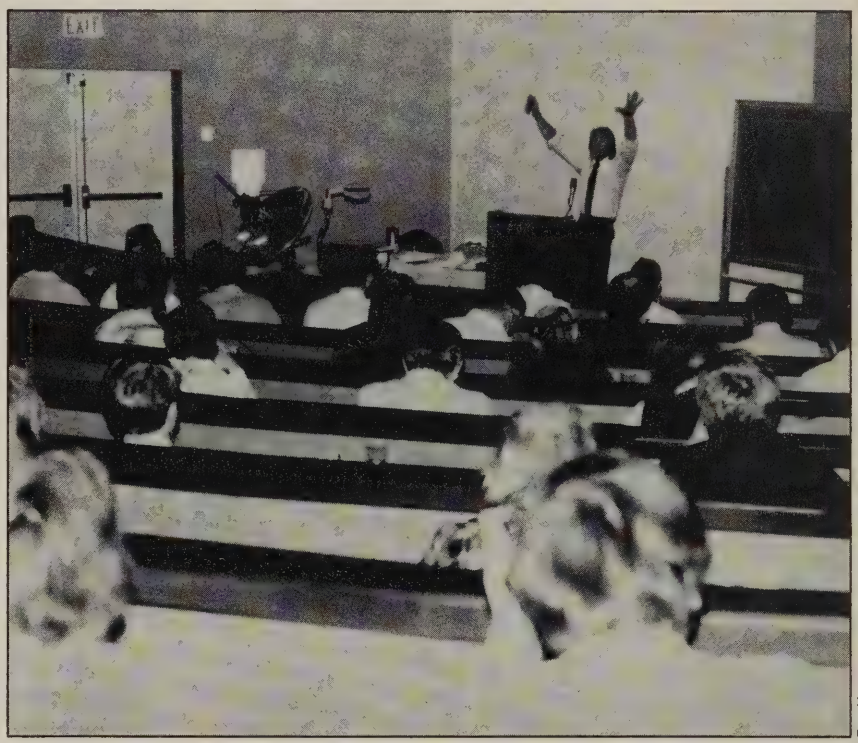
BY MIKE L. GUSTAFSON

THE TVRO INDUSTRY IS NOW RESPONSIBLE for the sale and installation of nearly a million private earth terminals. More than 300,000 additional systems are projected to be installed this year, and the general public will become even more aware of this new media system. As with most industries, there has been an influx of new, inexperienced (and sometimes downright dishonest) dealers and installers into the satellite TV business. In an effort to bring a little order to the chaos that has resulted, SPACE has launched the Dealer Certification Program.

The committee formed to organize and run this program is made up of Robert Luly of Luly Telecommunications, Chaparral's Taylor Howard, SPACE general manager Chuck Hewitt, and Mike Gustafson of Equatorial Communications Company. The committee's purpose is to create and administer an education program for new dealers entering the industry.

It is hoped that dealers enrolled in the program will return to their businesses and educate their staffs. With the certificate hanging on his wall, a dealer can advertise that he has SPACE's endorsement to sell and install satellite TV receiving equipment. Certification has a twofold effect: it raises the professionalism of the industry as a whole, and it gives the new dealer a better chance of survival in this increasingly competitive business.

Because of the burgeoning interest in satellite communications and home earth stations, some states now require satellite dealers to be licensed. If this industry can show that its trade association offers courses to educate these dealers and certify that they have at least a minimum level of training, then perhaps individual states will not institute their own programs. It's a sure bet that any license required by city or state will be restrictive and difficult to obtain. SPACE's Dealer Certification Program is designed to offer a national alternative to local licensing.



Ben Harry

In the antenna course, Bob Luly predicts the impact of 2-degree spacing.

There are 10 courses in the program, seven of which are necessary for certification; five are required courses, with two optional courses to be chosen from among the remaining five. Each course consists of a four-hour class taught by an industry expert, a written text, and a 10-question test; a 70 percent score is needed to pass the test. Should a dealer fail a course, he may take it again at no additional cost.

The first two courses were offered last September at the Nashville show jointly sponsored by SPACE and STTI. Of the 300 dealers who enrolled, 96 percent passed the tests and received certification. The courses were taught by Brent Gale, chief troubleshooter for Echosphere, and Luly. Students were asked to volunteer their comments when they handed in their tests, and judging from these comments, both courses were well received.

As with most new things, however, there is room for improvement. Some of the students' critical comments were right on target, and changes have been made. The majority of comments concerned how the classes were conducted during the trade show. Since each course is four hours long, many students asked that classes be held at times that do not

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conflict with the trade show. While this is a possibility, it is unlikely that many dealers would want to stay another day at a hotel just to take a couple of courses. Most satellite shows are held over a three-day period, and devoting four or eight hours during that time to attend classes seems to be the least expensive solution.

Each course is developed and taught by someone from the TVRO industry, and each is evolutionary; that is, it is subject to change as student comments dictate. Advanced courses are now being considered for those in the industry who wish to delve more deeply into the subjects offered, and new courses will be offered in the future.

It has been suggested that each course be evaluated by the full SPACE board before it is offered to dealers. While this is a fine idea in principle, it is a bit unworkable. It is very difficult to assemble the board to meet on items of major importance as it is, and to ask busy board members to sit through several four-hour classes is beyond the call of duty. There is, however, a possible compromise: have the board members sit in on the class as it is taught. This would allow them to see how the course goes with a real audience and hear the questions raised by the dealers.

Here is a short outline of each course:

Satellite Antennas for TVRO. Taught by Luly, this course is a basic explanation of how a parabolic antenna really works. Included are explanations of G/T, C/N, antenna noise temperature, focal point considerations, polarization, feed technology, illumination, and multiple-feed systems. The role antenna sidelobes and beamwidth will play when 2-degree satellite spacing becomes a reality is also examined.

TVRO Antenna Installations. Taught by Echosphere's Gale, this course delves into all aspects of antenna placement and installation. Terrestrial interference, building permits, local codes, conduit installation, and the installation as it affects the customer's home are some of the topics covered. Antenna type (mesh or solid) as a function of wind loading and weather is discussed, and actuator installation and power cables required are explained in detail.

Receiver Design and Technology. Taught by Robert Pizzi of Amplica, this course explains point by point how a C-band satellite receiver works. Major areas covered include IF bandwidth and how it affects receiver threshold, and the value of various types of demodulators used. Pizzi also tells how the LNA/receiver combination affects video quality.

Troubleshooting the Total TVRO System. The purpose of this course is to amass and dispense the collective knowledge of dealers who have more than 1,000 installations to their credit. Troubleshooting both new and old TVRO systems is covered right down to the individual component level, and different types of troubleshooting test equipment are named and explained. The primary goal is to prevent the new dealer from having to reinvent the wheel.

Zoning, Legal, and Legislation. Taught by a representative of Brown & Finn, SPACE's legal counsel, this course shows how dealers can work with zoning commissions to resolve

Each course is taught by someone from the industry.

local zoning issues. Current and proposed laws, and how they will affect satellite dealers, are also covered. Other topics touched upon in this course range from how to keep customers legal, how to deal with local cable companies, how to deal with local building codes and permits, and how to make use of services offered by SPACE.

Terrestrial Interference. Taught by Microwave Filter Company's William P. Johnson, this course is designed to show the new dealer what terrestrial interference is and how to avoid it. Johnson will tell how to conduct a site survey in a TI environment, how to use local blockage to hide from TI, and how to suppress TI with screens, IF traps, and microwave filters.

How to Sell the TVRO System. Major points dealt with in this course are how to set up the perfect showroom, how to close the sale, and how to educate the customer. Getting the most for each advertising dollar, selling the best system for each customer, and selecting a good distributor are other topics explored. →

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How to Start and Run a Small Business for Profit. Taught by Denise Gallant of Prosat, this course gives new dealers a solid lesson on profit margins, bookkeeping, accounting, and banking. Obviously, there is more to opening a dealership than simply knowing the technology; as part of any business, the owner must deal with finding, training, and in some cases, firing personnel. Other points of interest include giveaway programs, loss leaders, the proper markup for equipment, and how to deal with competition.

TVRO Financing, Repair Contracts, and System Insurance. Using financing packages to sell the TVRO system, selecting the best financing package for a particular dealership, and dealing with banks are covered in detail. Dealing with bad checks, using small-claims courts, and handling irate customers are also discussed.

The Geostationary Satellite System. Taught by Gustafson, topics include types of satellites currently in use, their expected longevity, and how aging satellites will change the TVRO business. International satellite reception techniques are covered, as is the programing found on foreign birds. Satellite footprints are given for each domestic satellite, and discussion focuses on how to choose the correct antenna size and type for various installations. In short, the total satellite communication system is covered in as much detail as a four-hour class allows.

Course outlines are not cast in concrete.

The first five courses listed are required; the remaining two courses needed to complete the program may be chosen from the other five courses. The education program is intended to be totally responsive to the needs of the industry, and is expected to evolve as all parties concerned become more experienced in administering and teaching the courses. Consequently, the preceding course descriptions are not cast in concrete.

As demand grows for the certification program, more instructors will be needed. Anyone who is interested in teaching and has specific expertise in any of the course subjects is encouraged to contact SPACE.

Three of the 10 courses will be offered at each major industry trade show. The first two courses were taught at the Nashville show, and three more were taught at STTI's Dallas show last November. By the time the Las Vegas show rolls around this spring, all 10 courses should be complete and ready to run. For those who may be unable to attend the national shows, the Dealer Certification Program will be offered at many of the smaller regional shows. It is anticipated that the program will soon be running at two to three locations each month.

For more information, contact: SPACE, 709 Pendleton St., Alexandria, Virginia 22314, (703)549-6990. □

Mike L. Gustafson coordinates seminars at STTI trade shows and is chairman of the SPACE Education Committee.

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Test Your Technical Know-how

When your state hands you an installer's exam, will you move to the head of your class—or find another line of work?

BY TOM PERRY

SO YOU THINK YOU'RE A PRETTY sharp dealer. But what if you had to pass a test to sell and install satellite earth stations? With the home TVRO industry growing the way it is, more and more states are requiring dealers to have licenses. If state governments get serious about enforcing the laws and develop tests specifically for TVRO dealers, you can bet those tests will include some tough questions on electronics.

The following is *Satellite DEALER's* informal certification test, which focuses primarily on the electronics part of the business. Those who can correctly answer 90 percent or more of the questions will receive a free *Satellite DEALER* baseball cap and automatically be nominated for Dealer of the Month.

Write your answers on a separate sheet of paper. If you want your graded tests returned, send a stamped, self-addressed envelope to:

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Entries must be postmarked by January 10, 1985. Don't forget to include your name, address, and phone number with the answers. Answers and winners will be listed in the March issue of *Satellite DEALER*.

Good luck, and no looking at your neighbor's paper.

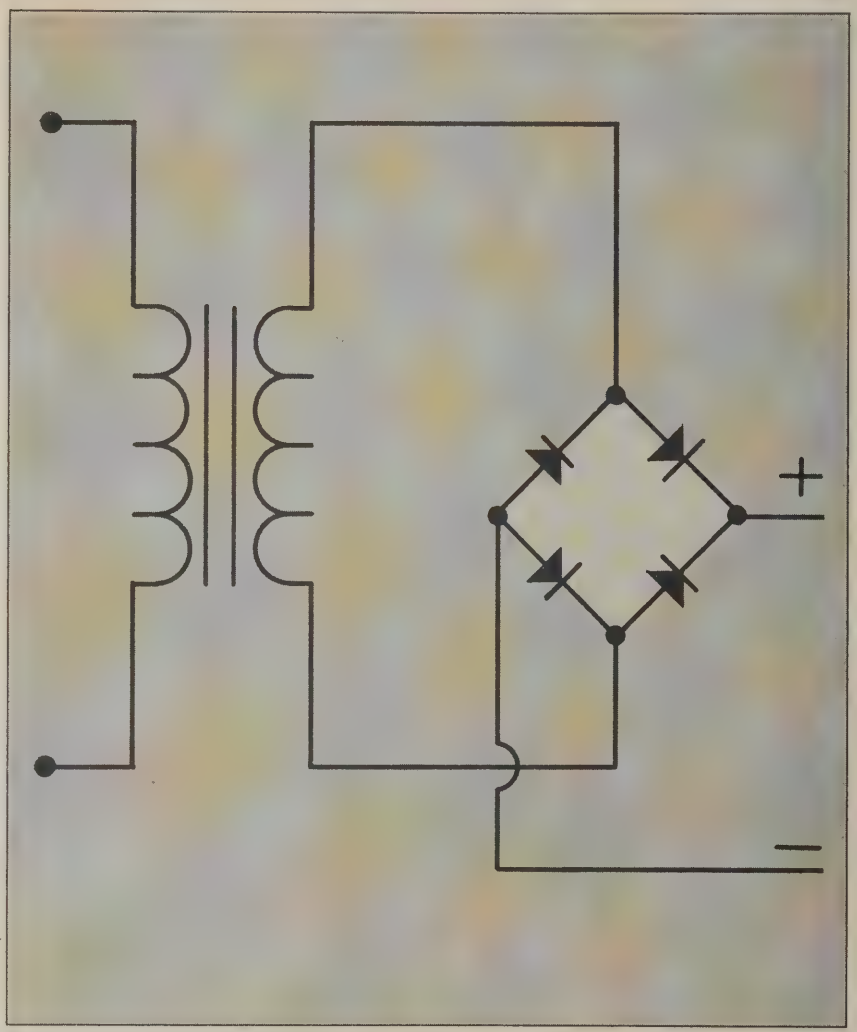

Figure 1. What does this diagram represent?

1) If you were watching Satcom F1, transponder 20, and its output power suddenly doubled, about how much signal increase in decibels would be received?
   a. 1 dB
   b. 2 dB
   c. 3 dB
   d. 5 dB

2) Your 12-foot parabolic reflector has a focal length of 54 inches. What is its F/d ratio?
   a. 0.275
   b. 0.40
   c. 1.30
   d. 0.375

3) What does figure 1 represent?
   a. The clamping circuit in a single-conversion receiver.
   b. Directions to the Odom hospitality suite in Las Vegas.
   c. A full wave bridge rectifier.
   d. A phase lock loop.

4) Which coaxial cable has a characteristic impedance of about 50 ohms?
   a. RG-11/U
   b. RG-59/U
   c. RG-6/U
   d. RG-213/U

5) Which frequency range is most

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likely to be the output of a block downconverter?
a. 400 – 900 MHz
b. 3.9 – 4.2 GHz
c. 68 – 72 MHz
d. 144 – 148 MHz

6) What is meant by a 3-dB beamwidth of an antenna?
a. It receives signals from a 3-degree area of the Clarke Belt when fixed in a stationary position.
b. It's the number of degrees from the antenna's center position in which the signal would be at half-power.
c. It's the bandwidth of a transmitted signal from a typical C-band transponder.
d. It's the average signal loss of a satellite in one year.

7) Most polar mounts have built-in declination or offset angles so they can be used at different:
a. longitudes.
b. latitudes.
c. elevations.
d. none of the above.

8) The test signal sent along with the video on many transponders is:
a. a digital binary encoded signal known as BITS.
b. sent in the horizontal interval and known as HITS.
c. sent in the vertical interval and known as VITS.
d. used for the emergency broadcast system.

9) Divide-by-two PLLs and delay line discriminators are:
a. found in tuning circuits of downconverters.
b. frequency stability circuits in LNA front ends.
c. video detection circuits in receivers.
d. counting devices in motor drive controls.

10) Which of the following satellites transmits using the orthogonal polarization method?
a. Gorizont 2
b. Intelsat 2
c. Molniya 1
d. Satcom F3R

11) On a servo motor polarizer, the white wire is typically:
a. the signal or pulse voltage lead.
b. the ground or neutral lead.
c. the B or DC supply voltage lead.
d. the RF carrier voltage lead.

12) A feedhorn using ferrite isolators:
a. receives both polarities at the same time.
b. has no moving parts.
c. is primarily for use with low gain (under 40 dB) LNAs.
d. receives circular polarization only.

13) The NTSC signal has:
a. 720 horizontal lines.
b. 720 vertical lines.
c. 525 vertical lines.
d. 525 horizontal lines.

14) If an LNA has a high signal-to-noise ratio, it:
a. would have an excellent gain, typically under 100 degrees K.
b. would have a low gain, typically under 120 degrees K.
c. would be efficient in amplifying the signal and deficient in amplifying the noise.
d. would most likely work with 2-degree spacing.

15) The Hall effect transistor is often found in:
a. the receiver's IF strip.
b. the frequency-divide circuit of a downconverter.
c. the counting circuit of a motorized antenna positioner.
d. the channel 3/4 modulator.

16) Where would a balanced mixer be found?
a. In the downconverter in a single conversion system.
b. After the GaAs FET in an LNA.
c. In the video discrimination circuit of a receiver.
d. In the counter system of a motor drive.

17) Which of the following best describes the single carrier per channel audio services most commonly in use?
a. Stand-alone, narrow-band FM signals as found on W5, transponder 22.
b. Stereo audio services that ride with the video as found on F3, transponder 3.
c. AM radio signals found on separate transponders with a single station per transponder as found on W5, transponder 22.
d. Digital data transmissions as found on F3, transponder 18.

18) You encounter significant picture degradation on co-polarized channels at the low end of the TVRO band, decreasing toward the middle of the band and clearing up altogether at the upper end. Your problem and solution are probably as follows:
a. interference caused by Ma Bell carriers at the low end of the band; install 60- and 80-MHz IF traps.
b. interference caused by Ma Bell carriers at the low end of the band; install RF notch filters.
c. out-of-band interference caused by a carrier at 6 GHz; install a 3.7 – 4.2 GHz bandpass filter.
d. out-of-band interference caused by a carrier at 2 GHz; install a 3.7 – 4.2 GHz bandpass filter.

19) In figure 2, which represents an NPN transistor?
a. _____
b. _____
c. _____
d. _____

20) The specification called gain is defined as:
a. the difference between input voltage and output voltage.
b. the ratio of output quantity to input quantity.
c. input quantity divided by output

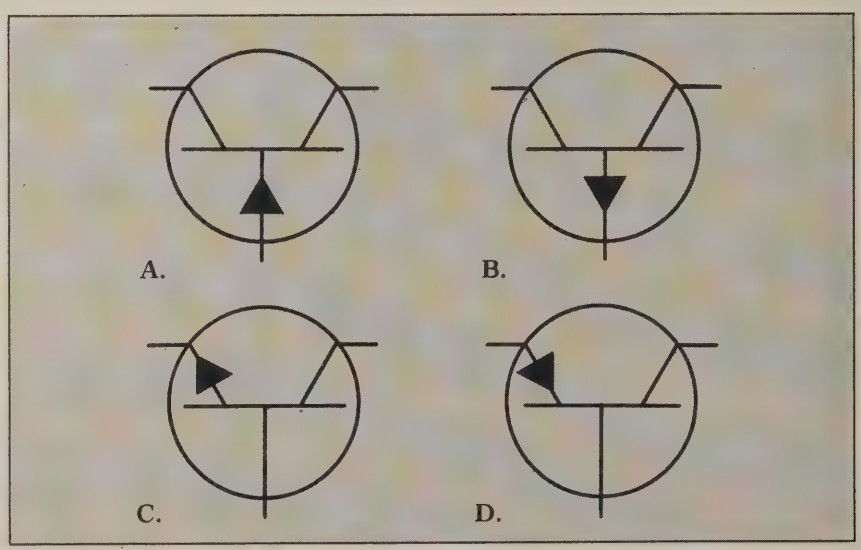

Figure 2. Which represents an NPN transistor?

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The display can accommodate several different component combinations.

APS24 Antenna Positioning System

Durable construction and simple operation make the APS24 a natural seller. Changing satellites doesn't have to be a complex operation. Can be infrared remote controlled when teamed up with the ESR240A.

LNA's

We know you choose your LNA's with great care. Considerable engineering effort has been invested in each Drake LNA. Whether it's our 85°, 100°, or 120° LNA, you can be sure of reliable operation and superb performance with a Drake!

VS35 Video Selector

The Drake VS35 takes all your customer's signal switching needs and consolidates them into one easy-to-use device. The VS35 will distribute five RF signal sources to any three outputs in whatever configuration is desired. As if this astonishing flexibility wasn't enough, the VS35 also features internal amplification for weak signal boosting and level equalization!

SA24 Stereo Adaptor

Stereo sound is a tremendous enhancement to any Satellite TV installation. For beautiful stereo reproduction, nothing matches the Drake SA24 Stereo Adaptor. All mode decoding, Dynamic Noise Reduction (DNR®), and other handy features make the SA24 a "must have" buy for any TVRO owner.

ESR240A Receiver

The ESR240A Receiver is the hands down customer choice for its features and convenience. An enhanced infrared remote control allows armchair channel selection, polarity control, audio adjustment — and best of all — remote antenna positioning when used with the APS24. The ESR240A is proving itself as the most popular home satellite receiver in the world!

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An overwhelming number of TVRO owners throughout the nation have placed their trust in Drake. It's taken decades of consistent quality engineering to build that trust. We're proud of our reputation in the Satellite TV field because we earn it every day. We know that a fine product by itself simply isn't enough. It takes strong nationwide support.

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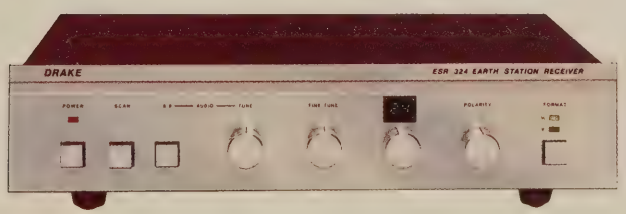

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A clean design and quality picture make the ESR324 an excellent buy. After all, a satellite receiver shouldn't look like the cockpit of a 747. Simplicity is the key. Turn it on, select the channels, sit down, and enjoy. Your customer will appreciate the ESR324 and so will you!

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The one the others copy.

quantity.
d. the total increase in output quantity over input quantity.

21) The electron flow in a working circuit passes through a transistor from:
a. base to collector.
b. collector to base.
c. collector to emitter.
d. emitter to collector.

22) EIRP is:
a. the strongest signal in CONUS.
b. earth-induced radio propagation.
c. the standard by which antennas are measured.
d. effective isotropic radiated power.

23) Which of the following are not normally found in ICs?
a. inductors
b. diodes
c. resistors
d. transistors

24) C-SPAN is:
a. the length of coax in feet from the downconverter to the receiver.
b. the adult movie channel on W 5.
c. the new 12-GHz DBS satellite.
d. None of the above.

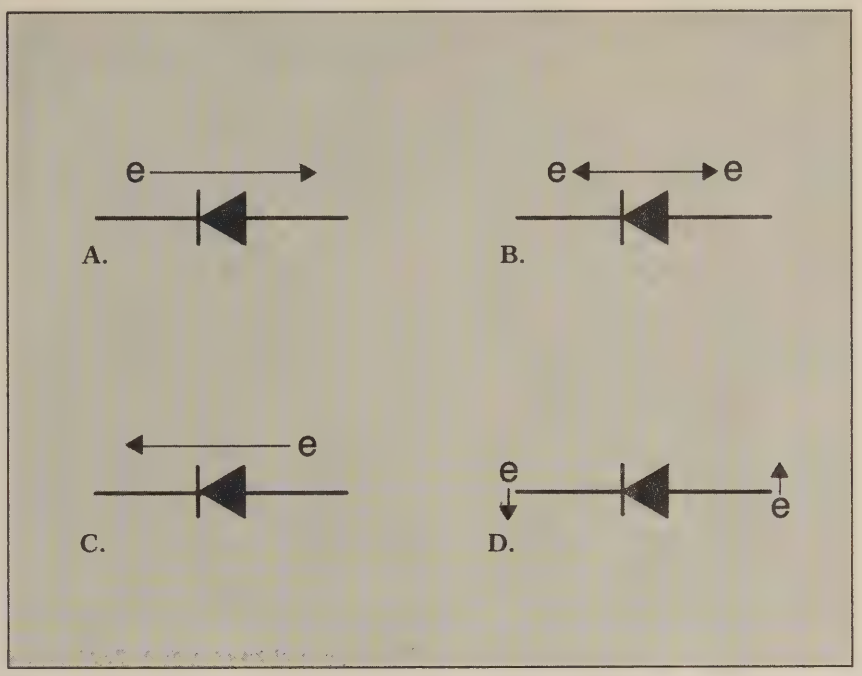

Figure 3. Which represents current flow through a diode?

25) In figure 3, which represents current flow through a diode?
a. _____
b. _____
c. _____
d. _____ □

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The Dallas Show

Everything's bigger in Texas, but STTI's Pan-American show exceeded expectations.

BY RON RUDOLPH

A BOMB WAS SUPPOSED TO FALL IN Dallas and it was expected to stink up the whole state of Texas. The Pan-American Satellite Electronics Show was the fifth (count 'em) convention of 1984, not including Consumer Electronics Shows and regional distributor shows. Some people were saying that five annual shows is three more than this industry needs. Despite this, however, the show exceeded expectations.

One strike against Satellite Television Technology International, host of the show, was that the event was held in late November, the busiest selling season of the year for a lot of dealers. This show was not expected to be a landmark event in the history of the TVRO industry, but it did attract more than 6,000 attendees.

As a result, some major manufacturers left their displays home and depended on distributors to exhibit their products. Among those conspicuously absent were United Satellite Systems, Luxor, Arunta, R.L. Drake, and Amplica. They may not have exhibited, but representatives from all these companies did attend the show—probably afraid they were going to miss something. There was plenty of action to miss.

Grabbing center stage once again was the scrambling issue. Home Box Office's Dennis Garcher, vice president of network distribution and development, Ken Kinderman, director of network distribution and development, and Vincent Caputo, technical manager, had a closed-door meeting with the board of directors of SPACE to discuss scrambling. (SPACE said HBO insisted the meeting be closed to all but its board members, while Kinderman claimed it was SPACE's idea.)

According to reports from the HBO representatives and members of the SPACE board of directors, the programers had absolutely nothing new to say. Yes, HBO will scramble—by the second quarter of this year, said Garcher—and no, HBO hasn't yet decided if it will serve the home TVRO market. Assuming HBO *will* deal with home TVRO owners, the programing will be distributed through local cable operators in franchised areas. Decoders would be sold by earth station dealers, but qualified dealers could not market the programing in cable franchised areas—a situation that could create monopolies for cable operators, according to SPACE.

Another important issue raised was M/A-Com's contract to supply decoders to HBO's cable affiliates and the manufacturer's reluctance to license the technology to other suppliers of the home TVRO market. The HBO representatives said M/A-Com, because of its investments in research and development of the technology, should have a six-month head start in manufacturing. That would leave other home TVRO receiver manufacturers with a year or more before descrambling modules could be integrated into their products. Also, some observers presume that M/A-Com will not be able to fulfill the home TVRO owners' demand for decoders at the instant scrambling occurs.

If nothing had changed since the Nashville show, why did the HBO people even bother showing up? "We're still trying to evaluate if there is a business here," said Kinderman. "We're trying to keep in touch. To do nothing would have been a step backward."

The outcome was that SPACE was forced to take a step forward. After the closed meeting, the SPACE board of directors held a quick caucus and then held a press conference.

"I must say we are very disappointed in what we heard," said Tay-

Thomas Woolf

More than 6,000 people passed through the secure entrance of the show floor.

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lor Howard of Chaparral, who had been elected chairman of the SPACE board the night before. "When scrambling occurs, our stand is that those of us who have private systems must have immediate access to scrambled programing. The cost must be reasonable, and it must be done in such a way that there's no monopoly achieved by a premium service or an equipment manufacturer."

Rick Brown, general counsel to SPACE, then announced that the board had unanimously decided to take the following action.

•Review and strengthen the second part of the legislation introduced by Representative (now Senator) Albert Gore, D-Tennessee, concerning encryption, and to seek the introduction of such legislation and its speedy passage in the House and Senate. The strengthening would make it clear that:

1) There is a right of *immediate* access to scrambled signals.

2) There are reasonable rates for scrambled programs for the consumer. Included in this provision would be an assurance that there will be no bundling of rates or services (meaning that an end user can choose to pay for individual services and not be forced to take a package of services), so consumers do not have to subscribe to R-rated movies when they want Disney, or vice versa. Also included would be the assurance that no monopolistic cable TV territories would be carved out.

3) There is no source for descrambling equipment that would result in a de facto monopoly for scrambling-ready receivers.

•File appropriate comments or complaints with the Justice Department concerning scrambling issues.

•Visit with government officials other than the Justice Department to seek appropriate relief from scrambling plans.

•Appoint a committee to draw up a marketing plan to negotiate with all premium program suppliers, so that scrambling will occur in a healthy environment for the home TVRO industry.

Said Howard, "We're talking out loud, we're talking very strongly, and it's important that this trade association and this industry have a strong, united front. The stakes here are very large and we're just playing footsie with one supplier right now. But we are making moves to decide how television is distributed to all homes in the future. We intend to go to the wall to make it right. I don't intend to live the rest of my natural life with a system that isn't right." (For an in-depth report on viewing rights legislation and scrambling, see "Interpreting the Cable Bill" on page 76.)

The Rest of the Show

Don't get the impression that everyone in Dallas spent three days talking about scrambling. There were actually a few innovative products to write home about. Heading the list was the Spoon, the long-awaited offset feed antenna from Birdview. Of course, it's virtually impossible to measure the performance of an antenna (or any equipment) at a trade show, but Bud Ross, president of Birdview and newly elected president of SPACE, was flashing range test patterns that showed sidelobes 25 dB down. When closer orbital spacing comes into play, we may be seeing more antennas of this design. Marketing this unique-looking dish will be a true test of Birdview's clout.

This show might be the last solo effort for STTI.

Just when you thought you'd seen every kind of actuator in creation, there were a couple of new twists at this show. The first, introduced by Galaxy Specialty Industry Corporation, is a horizon-to-horizon unit that travels 120 degrees of arc. The second is the Eagle's Prey robotics arm (actually debuted in at the Nashville show) from Nissho Iwai American Corporation. Both of these innovations may signify a trend away from the standard linear jack.

In the receiver line, keep an eye on Electrohome, which showed a unit that would make a good top-end addition to any dealer's line. The infrared-remote receiver is also being private-labeled for Channel Master. PenTec/MTI debuted its 2700 receiver and 2750 positioner, which both operate off a single remote control.

Meetings and Seminars

The foundations were laid for several organizations at meetings at this show. The SPACE dealer board, the SPACE board of directors, Women in Satellite Communications, the standards committee, and NASEM all elected officers and set up committees. (Reporting the business that took place at all of these meetings would read like the *Congressional Record*, so look for the bare facts in the Signals section of this issue, beginning on page 137.)

Seminar highlights included presentations on the international scene by Bob Behar of Hero Communications and author Mark Long. Rounding out the out-of-the-ordinary oratory were Peter Sutro of Patmar Technologies on SMATV mini systems and Doug Dehnert of USS on antennas.

Taking the prize for the most significant seminar, if we do say so ourselves, was "New Profit Opportunities for Home Satellite Dealers" put on by CommTek Publishing, publisher of *Satellite DEALER*. We are blowing our own horn here because, for the first time, representatives of real-world electronics heavyweights gathered at a home satellite seminar to discuss cross-merchandizing strategies. On the panel were Bob Garcia, vice president of Toshiba; Jim Young, regional vice president of Sony; Jim McCusker, General Electric's manager of marketing development; Jerry Calabrese, division general manager of Magnavox; Fred Phister, Source Video's director of marketing, and Roland Pepin, president of Design Sales, representatives for Shape Video.

Did the show bomb as expected? Judging from the amount of action and number of product introductions, the answer is a definitive no. Sure, there were problems: the Loews Anatole Hotel, a $25 cab ride from the airport, was Texas-style large and impressive at first glance. But a dealer had to be as rich as J.R. Ewing to afford a hot dog. The antenna farm was out in the north 40, making for a long cable run. Also, the weather didn't cooperate.

But most surveys say Texas leads the nation in home TVRO dealers and installations. With the Texans and a significant number of dealers from south of the border, the result was a crowded floor.

A final footnote: this show might have been the last solo effort for STTI. SPACE and Schneringer have agreed to pool their resources and jointly promote all their conventions for the next five years. □

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Divining a New Market

Local dealers face a big-time sales challenge as thousands of churches look to buy TVROs and big-screen televisions.

BY STEPHEN W. JONES

SATELLITE DEALERS WILL ENJOY AN unexpected boost in business this year, when as many as 25,000 religious facilities look to purchase their own satellite downlinks and projection televisions.

Most industry observers agree that this is the beginning of a trend toward electronic ministry, and that sales to churches may double in 1986, given the present economy. Surprisingly, sales of downlinks and projection televisions (which accompany more than 90 percent of all downlink sales to churches) are not confined to large institutions. Many of the churches interviewed for this article had congregations of less than 100, and one had a congregation of only 20 people.

In addition to original sales of equipment, there is currently a thriving market in the rental or short-term lease of TVROs and projectors, which the churches use to bring down special programing. Also, much of the equipment being sold in the religious market is not of the highest quality, and there should be a healthy aftermarket coming into its own by the end of 1985.

To be successful in selling equipment to religious institutions, an understanding of the needs of individual churches and a knowledge of the type of programing offered are essential. There are three types of programing offered by various denominations and ministries. Educational programing, including everything from choir instruction and financial planning to Sunday school classes, is beamed directly to churches. Evangelical services and religious entertainment are also directed to individual churches, for use primarily as part of a Sunday ser-

Robert Dawson

Heaven knows how many churches will open their doors to satellite television.

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Other Drake Products:

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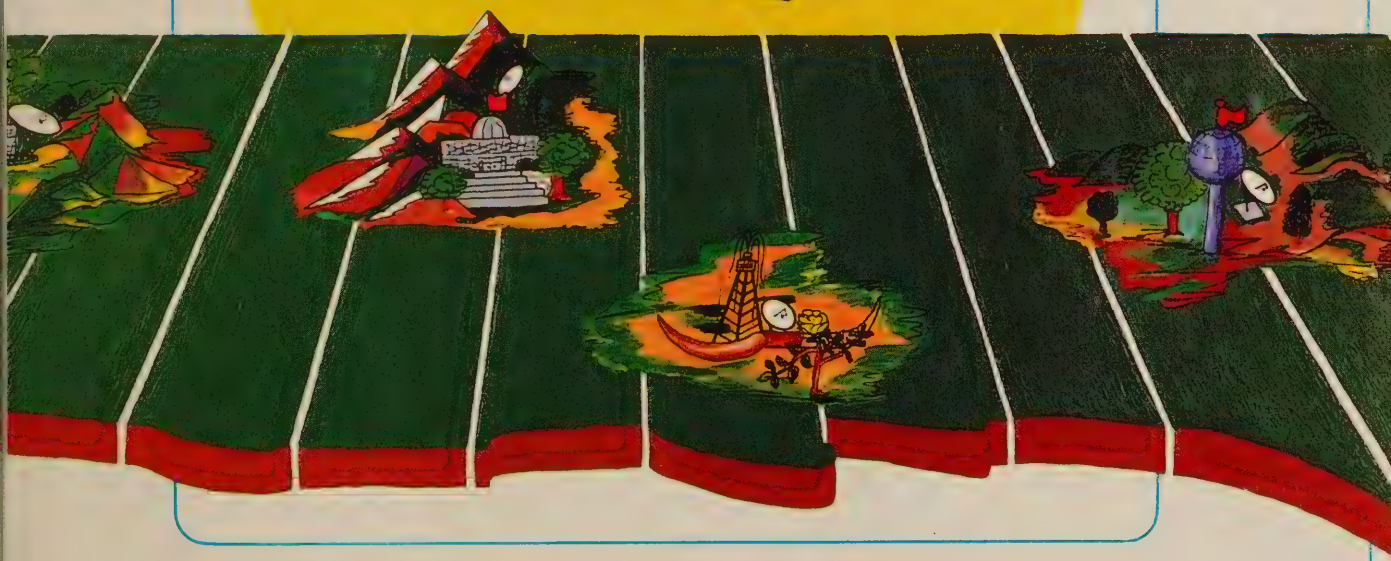
- Stereo Processor
- 120°, 100°, 85° LNA's



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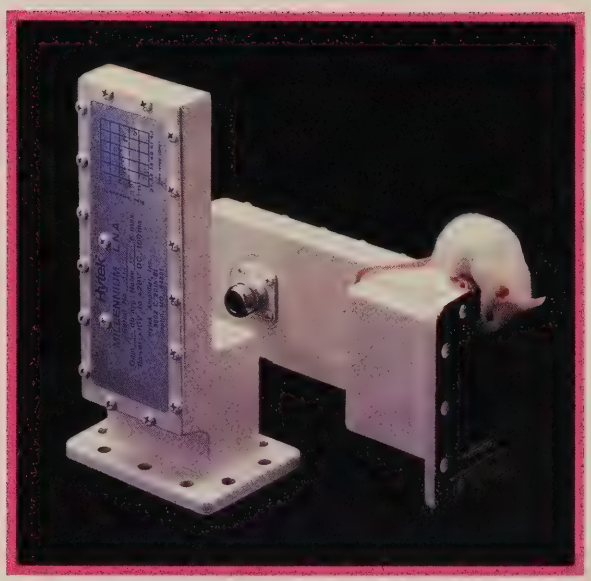

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vice, and are viewed by the entire congregation in the sanctuary. For this service a voluntary or compulsory fee is assessed. Other religious programing is intended primarily for home use, and is often distributed by cable, low-power TV, or videotape.

Why are churches moving so rapidly toward satellite distribution and reception? According to Joseph Bivens of the (United Methodist) World Parish Network, which is scheduled to begin programing early this year, the answer that a church might give is not much different than that of a small nightclub. "Leading speakers, choirs, and other religious personalities would never darken the door of a church in Podunk, Kansas. But via satellite, members of that church can get together and participate in a program that includes the best music and speakers."

Bivens goes on to say, "Now, note that I said 'participate.' It isn't like watching at home; a family is together in the church, watching in fellowship with other church members. They bring their Bibles, they sing along from their hymnals, and the minister has a part in the program."

Bivens also points out one of the prime motivations for churches to purchase satellite downlinks: "The past 10 years have seen a tremendous growth in the attendance at charismatic Christian services, especially among young couples," he says. "Part of the reason for this is that the services are more informal, they're at night, and they have music with a more modern, upbeat tempo. Some ministers are losing part of their congregations, possibly because they are more of intellectuals than showmen, or maybe their church is too small to do that kind of production. But if you can bring in a good show and put it on a big screen, you are going to attract those young people, and they are going to support the church."

This message has been heard loud and clear at the headquarters of every major denomination. The Southern Baptist Sunday School Board will in the next two years install between 2,000 and 2,500 complete systems, including dishes, distribution systems, and projection televisions. The Mormons have installed 900 Scientific-Atlanta systems for use with their LDS (Latter-day Saints) network, a project they began full-scale in 1982. The Catholic Telecommunications Network has installed 5-meter dishes in 54 of the 180 U.S. dioceses, and plans eventually to install similar equipment in every U.S. diocese, hospital, university, and perhaps many individual churches.

There are many existing and planned electronic ministries that expect to gather a combined total of 15,000 new correspondent churches during the next year, each of which will purchase a TVRO system and large-screen TV, with total system prices running between $4,100 and $8,000. Some large churches, however, have already purchased or contracted for systems in the $50,000 to $100,000 range.

One of the electronic ministries that has made a substantial commitment to satellite ministry is Pastor John Osteen's Lakewood Church. The World Satellite Network began broadcasting three nights of snappy, upbeat church services each month to approximately 1,100 churches in September 1983. Lakewood Church is large by any standard, with a congregation of 15,000 and a facility that boasts 40 buildings on 40 acres in Houston, Texas.

'The marriage of satellite transmission and church reception was made in heaven.'

The large sanctuary serves as the studio, in which there are five Philips cameras, a 120,000-watt lighting grid, and numerous wired and wireless microphones. An adjacent room houses the production and editing facility, which utilizes a Grass Valley Group production switcher, four Ampex 1-inch tape decks, a Mach-1 computer editor, a Chyron RGO-2 character generator, and a TASCAM 24-channel audio mixer. The 1,100 receiving churches typically show the program on a 10-foot diagonal screen located in the sanctuary. Recipients include interdenominational congregations, as well as Methodist, Presbyterian, Baptist, Assembly of God, and other congregations.

Word of Faith Outreach in Dayton, Texas, bought a dish and large-screen TV one year ago for its congregation of 200 families and now receives World Satellite Network's programing. As at almost all churches, the dish is mounted near the building, and the screen for the projection television is mounted on the platform of the sanctuary. According to a church spokesperson, attendance for the nighttime programs is as good or better than Sunday morning services.

In El Cajon, California, Victorious Faith Center's pastor, the Reverend Ed Jolley, used a $7,000 interest-free loan to purchase a downlink and 10-foot projection TV for his congregation of about 125 people. Jolley uses the equipment for a variety of religious and educational programing, for a total of about 15 hours each month. The screen and projector are mounted in the sanctuary, but since the system is partially portable, it has also been used to downlink sporting events at other locations.

World Satellite Network does not own uplink equipment, so each month it retains the services of Satellite Transmission and Reception Specialists (STARS) in Houston. STARS maintains a fleet of five fully redundant transportable uplinks and 12 fully redundant transportable downlinks, which are used for its substantial teleconferencing and entertainment event business.

Ray Guy, director of sales and marketing for STARS, offers some insight into the church market. "The hat that I normally wear makes me think primarily in terms of entertainment-event audiences, but that really isn't much different than what a church requires," he says. "The existence of a church depends on an audience, or congregation, and being able to bring in a variety of programing is a huge benefit to them. The marriage of satellite transmission and church reception was made in heaven."

One dealership that has enjoyed some success in selling projection televisions and, more recently, satellite equipment to churches is Alpha Audio of Valencia, California. Formed by John Virden eight years ago, Alpha has concentrated its marketing efforts on such institutions as schools, theaters, training facilities, and churches. As part of its efforts to get church business, Alpha mails a

flier every 60 days to promote products it carries.

A few months ago, the flier highlighted the new Cinemabeam video projector, manufactured by Runco Video of Foster City, California. "The response was tremendous," says Virden, and as he sold the projectors, he discovered that they were almost exclusively for use with TVROs installed by churches. Consequently, Virden began to market satellite equipment.

Another company that has cracked this market is Televideo, owned by Linda and David Steppe in San Diego, California. Their five-year-old dealership employs 20 people and will gross about $5 million this year. While they do a booming business in individual components, their primary business is the design and sale of video transmission and production facilities. They first installed a video production facility for a large local church, and the reputation that job earned them, along with the efforts of a salesman assigned to that market, has resulted in numerous sales. Currently, about 15 to 20 percent of the Steppes's sales volume is attributed to the church market, and they are just now beginning to sell TVRO equipment.

Says James Wellnitz, vice president of sales and marketing for Runco Video, "The reports we receive from our dealers verify our earlier belief that the church market would be an important segment of the total market over the next decade. I've been in projection television since the beginning, starting with Advent. When I was with Kloss, I arranged for the sale of 850 units to the Mormon Church, which really opened my eyes to the possibilities of this market. I've even hired a man here at Runco whose only responsibility is to help dealers penetrate the religious market."

Pat Bohana, group business development manager for Scientific-Atlanta, agrees. "The last five years have seen a tremendous move toward the use of satellite technology for internal communications in the various churches," he says, stressing that "it behooves all of us in the industry to provide cost-effective, high-quality equipment to these networks and churches."

Star View Systems of Pocahontas, Arkansas, manufactures both dishes and receivers, and has a dealer base of about 200. Star View has been the equipment source recommended by several of the charismatic Christian ministries, and last year the company sold about 400 systems in that market. Star View fields an installation crew that travels around the country to install the TVRO systems and projection TVs at each location. According to company spokesperson Ann Hastings, Star View plans to sell 2,000 to 2,500 complete systems—many of them to the Southern Baptist Sunday School Board—to churches in the next two years.

If it's true that the early birds get the worms, then dealers who begin calling on churches now, especially churches in relatively remote areas, are likely to be the ones who get the sales. "Churches are like any other institution, and most big companies," says Alpha Audio's Virden. "The decision-making process normally involves a number of people, and while you do get some quick sales, there is sometimes a big time lag between the first demonstration and the actual sale. But once you establish yourself in that market, they will keep coming to you for their equipment needs. My advice is to get started now; this is the time to get in on the ground floor." □

A Pitch and a Prayer

The local church is the best place to begin selling religious programing. Make an appointment with the minister and explain what you have to offer his parishioners (and to him while you're at it—nobody can deploy a TVRO system to greater educational effect than a pastor), and ask for the mailing list of his congregation. If your man of the cloth balks, bury him in information, letting him know just what TVROs will mean to his flock. Be sincere and show him you're concerned with more than just your profit.

When you approach prospective customers, it's best to remember that religious programing appeals differently to different people. Scan the birds in your spare moments to get a personal feel for the material, then probe the interests of each customer and tailor your sales pitch accordingly.

For example, a dish can be a real treasure for the serious seeker of theological enlightenment. Almost every religious service has some form of Bible study; in fact, it is possible to take radio correspondence courses through the Moody Broadcast Network. Ask for your customer's favorite pulpit orators and let him know where they can be found. Jerry Falwell, Oral Roberts, Jim Bakker—they all rain sermons from the sky. In addition, a dish will connect the serious student with the religious community at large. He can travel to major conferences via the coverage on TBN, stay abreast of new developments, and even participate in discussions on phone-in talk shows. And with a dish, the serious student need not wait until Sunday for edification; should he so desire, he can spend his every waking hour viewing religious materials.

For others, religious programing is an appealing alternative to the sex-and-gore mentality of regular network television. Many genres of bygone days—the variety show, westerns, non-jiggle sitcoms, serial adventure stories, music specials without purple-haired guitarists and satanic imagery—are flourishing on religious television. CBN is a gold mine of programing for those who yearn for another era. For those who want TV to affirm rather than threaten traditional values, family programing is the key.

Another appeal of religious television is its children's programing. This is an especially effective hook for the religious parent who is fearful of the impressions made by network TV on young minds. CBN, ACTS, and TBN all offer an abundance of children's shows that inculcate religious truths in an entertaining, non-violent manner. Be sure to mention children's programing available on non-religious networks as well.

The subcarriers provide further selling points. Visually impaired people or those who have difficulty reading can profit from the Bible and Christian literature readings. Music is another hook; tell a prospective customer that he need never buy another Christmas record. Also, significant amounts of gospel, choir, and organ music is usually unavailable over local stations, especially in rural areas. Those who love gospel music can gorge themselves on the abundance available on both religious radio and television.

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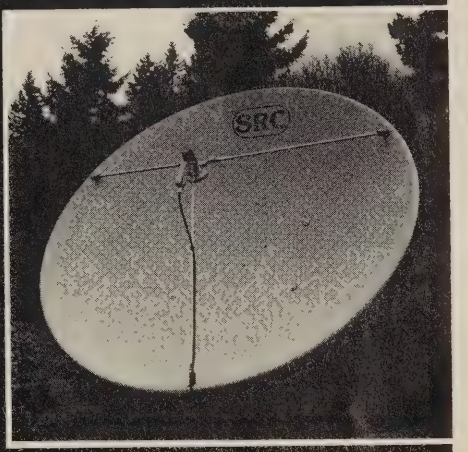

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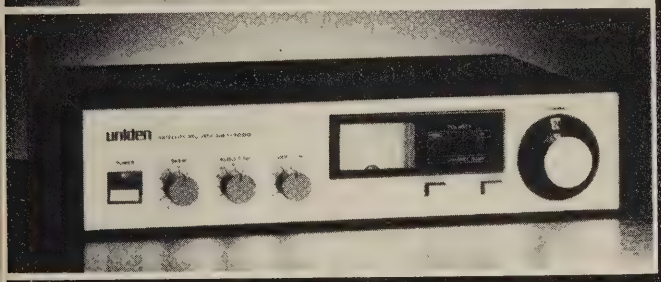

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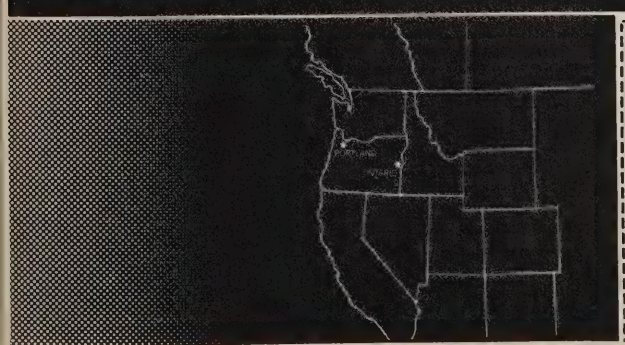

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Pennies from Heaven

Learn what religious programing is available via satellite and reap your earthly rewards.

BY TED DYER

OVERLOOKING THE SALES POTENTIAL of religious programing is an easy mistake for a satellite dealer to make. The amount of transponder time it consumes and its impact as an issue in the recent presidential election are but two examples of religion's resurgence as a social and political force. The interest is there, and dealers should consider tapping it.

Dealers first must acquaint themselves with the impressive scope of religious programing. Six networks deal with religious matters exclusively, as do three subcarriers; others mix spiritual and secular materials, or use church-inspired standards to present "family" programing. Some networks aim at specific denominations, while others are tailored for a general audience. Rest assured that the tastes of every religious viewer can be satisfied by satellite TV.

One of the most popular full-time religious networks is PTL Satellite: The Inspirational Network (Satcom F3, tr. 2), a 24-hour evangelical service. The headliners are Jim and Tammy Faye Bakker, who host a daily hour-long talk/variety show that features Christian celebrities. Tammy Faye used to have her own program, *The Real World of Tammy Faye*. Now in reruns, it is aimed at women viewers and offers special segments such as *Recipe of the Day* and *Helpful Hints*, in addition to tips on diet and exercise. Also, Tammy Faye helps women maintain biblical standards in an era of changing sex roles. Although PTL consists largely of preaching and teaching—its staff includes such evangelical luminaries as Oral Roberts and Jerry Falwell—it provides entertainment and children's fare as well. Much Christian music is heard on both headliners' shows and on several music specials. The performers, such as Pat Boone, the ubiquitous Faye, and the PTL Singers, are chirpy and upbeat. *Inside Track*, a variety show for teens, is hosted by eight youths; in *Circle-Square*, children act out dramas on such subjects as peer pressure, lying, and cheating. Cartoons and animated adventure shows are shown as well.

EWTN

Mother Angelica founded the Eternal Word Network on "a hope and a prayer."

The Trinity Broadcast Network (Satcom F4, tr. 17) is a 24-hour network similar in format to PTL. The flagship show is *Praise the Lord*, a three-hour program shown five days a week that employs a talk/variety format. The show frequently hits the road to cover various religious conferences and special events. Children's programing is available on TBN as well, including a version of the flagship program for pint-sized viewers called *Kid's Praise the Lord*, a Bible quiz show, an animation and puppetry offering titled *Toddler's Place*, and a variety show known as *The Gospel Bill Show*. Also, TBN airs an innovative program aimed at teens, *Real Videos*, that consists of Christian rock videos. In addition,

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TBN boasts a stable of teachers and preachers, and employs wholesome singers for entertainment. Health and exercise shows are also aired.

The National Christian Network (Satcom F4, tr. 7) is another multi-denominational network, but without the overall evangelical emphasis. NCN boasts offerings such as *Insight*, a Catholic drama, and religious soap operas. Besides the obligatory church services, Bible studies, and music specials, NCN produces a phone-in talk show with provocative topics. Unlike PTL and TBN, NCN is almost, but not quite, a 24-hour network. From 4 to 7 p.m. ET, the Prime of Life Network airs on the NCN transponder with general programing aimed at the 45-and-older set.

Other networks keep the evangelical flavor of the full-time, multi-denominational services, but mix in generous helpings of family viewing. The most popular of these is the CBN Cable Network (simulcast on Satcom F3, tr. 8, and Galaxy 1, tr. 11), which is the pet of cable operators and private TVRO owners alike because of its abundance of vintage 1950s sitcoms and Westerns. Nostalgia buffs salivate over such fare as *Romper Room, Dobie Gillis, Bachelor Father, Love That Bob, Jack Benny, Burns and Allen, Wyatt Earp, The Rifleman, The Lone Ranger, Wagon Train, Cisco Kid* and *Roy Rogers*. CBN movies—consisting largely of shoot-'em-up Westerns featuring iron-jawed toughies in the John Wayne and Gary Cooper mold—round out a pristine programing philosophy. Also aired are game shows, hints-for-the-homemaker programs, and news. The religious centerpiece of CBN is *The 700 Club*, a 90-minute TV magazine broadcast four times each week and hosted by Pat Robertson, the president and founder of CBN. Robertson is the religious mainstay during weekdays, but the weekend schedule bustles with other preachers, teachers, and gospel singers.

David Wade hosts a cooking show on ACTS.

Another family programer is the ACTS Satellite Network (Westar 5, tr. 4). Twenty-five percent of the programing deals with religion directly, but there is no headliner of the Bakker-Robertson stature, and the remaining programing features little in the way of vintage classic television, although it does offer wholesome dramatic and comedic classics from Hollywood. ACTS relies upon a stable of preachers in a wide variety of contexts, and its secular material has a contemporary flavor. Besides the standard talk shows, Bible studies, video magazines, and music specials, ACTS produces programs highlighting the testimonials of famous athletes and Hollywood celebrities, in addition to a segment presenting services from churches around the nation. Jerry Clower, a high-powered, down-on-the-farm comic from Yazoo City, Mississippi, spearheads the secular portion of ACTS as host of a country music show. ACTS boasts a pair of cooking programs, a college-bowl type quiz show, a segment for housewives, and a Mr. Fix-it show for household do-it-yourselfers. *Cope*, a new and innovative live call-in counseling show, has recently been added. Perhaps the strongest aspect of ACTS programing is its children's material. *Gigglesnort Hotel* is a puppet show that won an

***ACTS's* The Sunshine Factory *is a Christian version of* Sesame Street.**

Emmy, and it blends nicely with the puppet Lambchop on another kids' offering, the old *Shari Lewis Show*. Among others there is also *The Sunshine Factory*, a Christian version of *Sesame Street*.

The Audio Files

The three subcarriers, all 24-hour services, also mix religious and family materials. The Moody Broadcasting Network (Satcom F3, 8.1/7.92 MHz) is an evangelically influenced radio station with a 50/50 music talk format. Affiliated with the Moody Bible Institute, MBN offers bible and education courses for credit. In addition, there is children's programing, news from a Christian perspective, dramatic readings, and a call-in talk show. The Satellite Radio Network (Satcom F3, 6.2 MHz) is an all-talk station that consists of traditional ministries and Bible study in the morning, talk shows—many with phone-in sections—in the afternoon and early evening, followed by a simulcast of PTL from 10 p.m. to 6 a.m. ET. Family Radio Network (Satcom F4, 5.58/576 MHz) is 80 percent

EWTN

John Michael Talbot strums a tune on EWTN's **Troubadour for the Lord.**

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music: traditional organ and choral music with a sprinkling of black gospel. There are readings of the Bible and Christian literature, a call-in Bible study program, and a 45-minute audio magazine.

Three networks offer religious programing that is specifically denominational. The National Jewish Network (Satcom F3, tr. 18), broadcasts from 1 to 4 p.m. ET on Sundays. Santa Fe Communications (Satcom F4, tr. 23) is a 24-hour service for Catholics that has as its centerpiece a three-hour daily video magazine called *Heart of the Nation*. There is something of an international flavor in the form of *Bless Me Father*, an English sitcom about a parish priest, and *The Sullivans*, an Australian series. Secular programs include an Abbott and Costello film series and various old movies.

The unquestioned star of Catholic television is the plucky Mother Angelica of the Eternal Word Television Network (Satcom F3, tr. 18). She founded the network on a hope and a prayer, so to speak, and she displays a down-to-earth frankness that differs refreshingly from the bourgeois smugness of many television evangelists. She strictly avoids on-the-air solicitations and often has cash-flow problems. "It does frighten me sometimes," she told *The Birmingham News*. "There are times when hardly any money comes in, and we have to worry. It makes my stomach queasy at times. I know I have faith, and I accept that, but my stomach doesn't know I have faith." In defense of her noncorporate style she told *TV-Cable Week*, "Everything today is feasibility studies. Suppose the Lord had done a feasibility study on whether or not he should have chosen those 12 Apostles?"

'I know I have faith, but my stomach doesn't know I have faith.'

Besides Sunday Mass, Bible studies, Hollywood movies, and several issue-oriented talk shows, EWTN produces shows with an intellectual interest, such as *The Glory of God*, which reviews important events in church history. There is a cooking show, *Wok With Yan*, several children's segments such as the adventure series *Robin Hood*, and a soap titled *Westbrook Hospital*. The network, which operates from 8 p.m. to midnight daily, has a distinctly contemporary feel.

Finally, there is The University Network (a.k.a. The Unchannel; Westar 5, tr. 2), a 24-hour station that has little to do with universities. Dr. Gene Scott, holder of a Stanford Ph.D, holds many unorthodox views, which he expresses in an unorthodox style. A newspaper critic wrote that Scott has stretched the medium of TV "by elevating nonprofessionalism to an art." □

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A Satellite Service Call

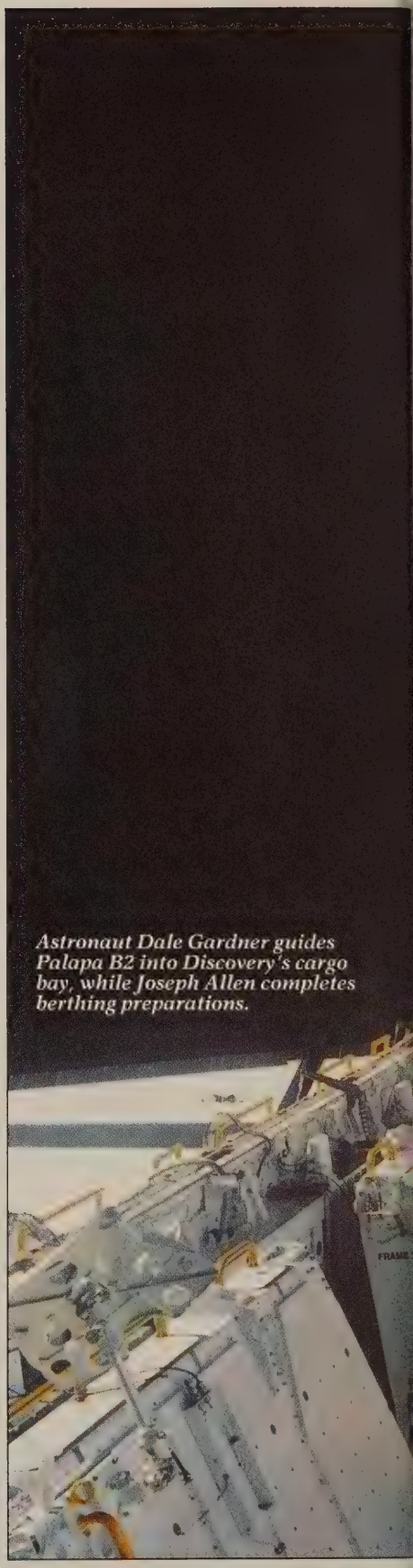
Westar 6 and Palapa B2 get a second chance to reach the Clarke Belt.

BY SCOT KERSGAARD

THE RESCUE BY NASA OF WESTAR 6 and Palapa B2 demonstrated that malfunctioning satellites do not have to be abandoned, replaced, and forgotten by all except those responsible for the failure and those who insure them. The two satellites were retrieved by the space shuttle *Discovery* and returned to Earth for repairs and relaunching. Palapa B2 and Westar 6 had been regarded as good examples of what can go wrong in a field as new and as complex as satellite communications. Both satellites were launched from the shuttle *Challenger* in February 1984, but failed to reach geosynchronous orbit due to the failure of the payload assist modules.

These two satellites were different from other failures, however, as they generated immediate debate about the possibility of retrieving and repairing them. Many journalists and even a number of industry analysts concluded that the satellites could not be retrieved. Among the skeptics were officials of Hughes Aircraft, which built both satellites, and Western Union, the original owner of Westar 6. More optimistic was NASA, where astronauts and administrators alike indicated that a rescue operation might be possible.

Last spring, when asked by *Satellite ORBIT* if the space shuttle could be used to rescue the errant satellites, Captain Chet Lee at NASA's Washington, D.C., headquarters replied, "Sure, that's exactly what it was designed to do." *Discovery* and all the Buck Rogers gadgetry created to go with it performed wonderfully when finally given the chance, but it was the work of the four-man and one-woman team that made the difference between success and failure. Astronauts Dale Gardner and Joe Allen made the operation look easy in front of a national television audience of millions as well as to TVRO owners viewing NASA's own contract channels (Galaxy 2, tr. 15; Satcom F5, tr. 13; and Satcom F1R, tr. 9). The two astronauts maneuvered the two 1,200-pound satellites into *Discovery's* cargo bay one at a time with the help of a 50-foot mechanical arm and a pair of $15 million jet packs, then brought them



Astronaut Dale Gardner guides Palapa B2 into Discovery's cargo bay, while Joseph Allen completes berthing preparations.

NASA

back to earth unscathed. In so doing, they proved that satellites can be rescued if they are within the shuttle's range.

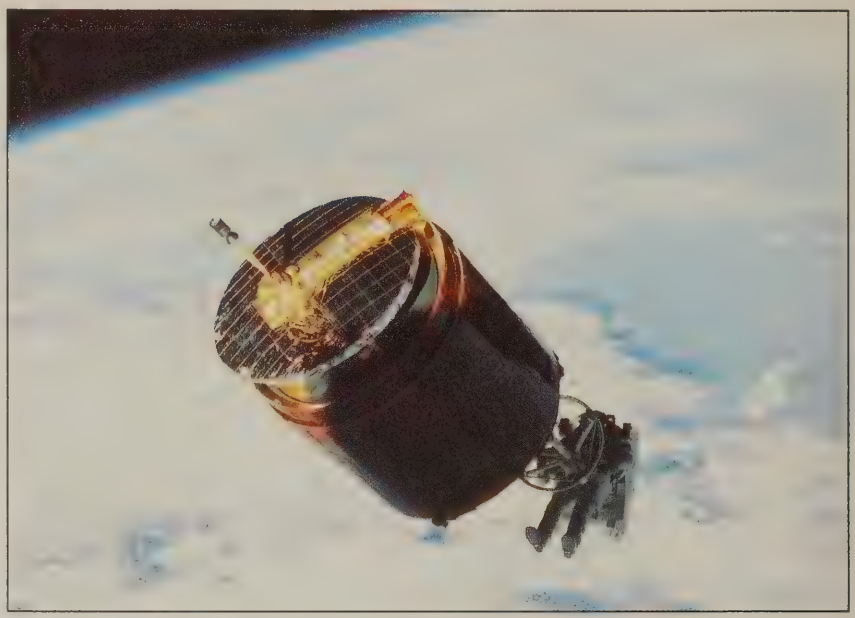
The rescue prompted sighs of relief and more than a small celebration among the consortium of insurance companies that paid out an estimated $200 million in damages when the satellites failed to reach the Clarke Belt.

It was not the first time the insurance companies had taken a bath on satellite ventures. Numerous satellites have been lost or have malfunctioned. In 1984 alone, insurance company losses were an estimated $300 million—or more. Had the rescue failed, it is certain that insurance rates for satellites would have risen astronomically.

Insurance company representatives say rates will still go up because of the losses already sustained, but the increase will not be nearly as great as it could have been. "As insurers, we will take note," said James Barrett, president of International Technology Underwriters, to the *New York Times*. "I think we'll certainly look upon shuttle launches with greater peace of mind."

Just what effect the rescue will actually have on the future of satellite communications, however, remains to be seen. An official with Lloyds of London told the *Wall Street Journal* that he does not expect NASA to conduct future rescues at the same bargain-basement price it did this one. The insurance companies paid NASA only $5.5 million for the rescue, and also paid Hughes Aircraft $5 million to build the retrieval equipment and to guide the satellites into orbits where they could be rescued. NASA won't say how much the rescue cost, but the Associated Press and the *Los Angeles Times* estimated the cost of the mission to be more than $125 million. The shuttle also launched two satellites on the same mission for a price of at least $13 million.

Westar 6 and Palapa B2 have both belonged to the insurance companies since the damages were paid to the original owners. Now the insurers plan to resell both birds for $30 million to $40 million each. At press time, Indonesia had indicated it may be interested in repurchasing Palapa. Western Union had not yet commented publicly about whether it would repurchase Westar. □



NASA

Gardner, strapped into his jet pack, begins to stabilize Westar 6.

NASA

Gardner and Allen do some advance sales work for the insurance consortium.

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BR Satellite: Alive and Well?

Here's what really happened to Ben Rose.

BY RICK ARDINGER

THE STORY OF BEN ROSE'S TRIAL and conviction for filling illegal prescriptions for methaqualone while working as a pharmacist in the late 1970s has all the elements for a chapter in a Mario Puzo novel: shady doctors, nervous pharmacists, thugs, and the Drug Enforcement Administration. Sentenced to a year and a day in jail and fined $50,000 in April 1984, Rose began serving time on July 15 for dispensing the drugs and evading taxes. According to sources at BR Satellite in Roslyn, New York, Rose is expected to be released in February. The controversy surrounding the case has shaken but not broken one of the biggest and best distributorships in the industry.

When word first got out that Rose was in trouble with the law, rumors as to why ranged from the absurd to the ridiculous. Even some of BR Satellite's employees were under the impression Rose was visiting manufacturers in Japan, and that he would be gone for some time.

The news broke last August when BR employees were no longer able to field questions about Rose's sudden disappearance. Mike Stevens, formerly of Norsat and now acting as BR's chief executive officer in Rose's absence, told *Satellite DEALER* at that time that Rose went to the Drug Enforcement Administration in the spring of 1982 as an informant willing to expose the prescription drug scheme he was involved in. Rose says he came forward to inform the DEA of a plot by mob figures to murder a doctor who was working undercover for the DEA. For his part in unraveling the crime, Rose bargained for a reduced sentence.

According to grand jury indictments, Rose's involvement began in 1976, when doctors and other conspirators devised a plan to open diet clinics and stress centers in New York City, Chicago, Boston, and Fort Lee, New Jersey. According to court documents, the clinics were nothing more than fronts for dispensing prescriptions for methaqualone, also known as Quaaludes. The centers purported to offer medical care, but almost every customer received a prescription for Quaaludes. The primary pharmacy filling the prescriptions in New York City was Edlich Pharmacy, owned by Ben Rose and his father, Leon.

According to grand jury indictments, Rose's co-conspirators, Herman "Woody" Witt (a.k.a. Dewitt Witt), Gary Ellentuck, and Robert Rosenberg, tried to conceal their ownership and control of the medical offices by requiring the doctors in the clinics "to sign leases, open bank accounts, and pose as the owners of the establishments."

In the spring of 1979, Witt and Dr. Ronald Asherson opened the Manhattan Center for Research into Stress and Pain. According to court documents, from July 1, 1979, to December 31, 1980, doctors at the Manhattan center wrote approximately 8,403

"I've become stronger because of this entire experience," says Rose.

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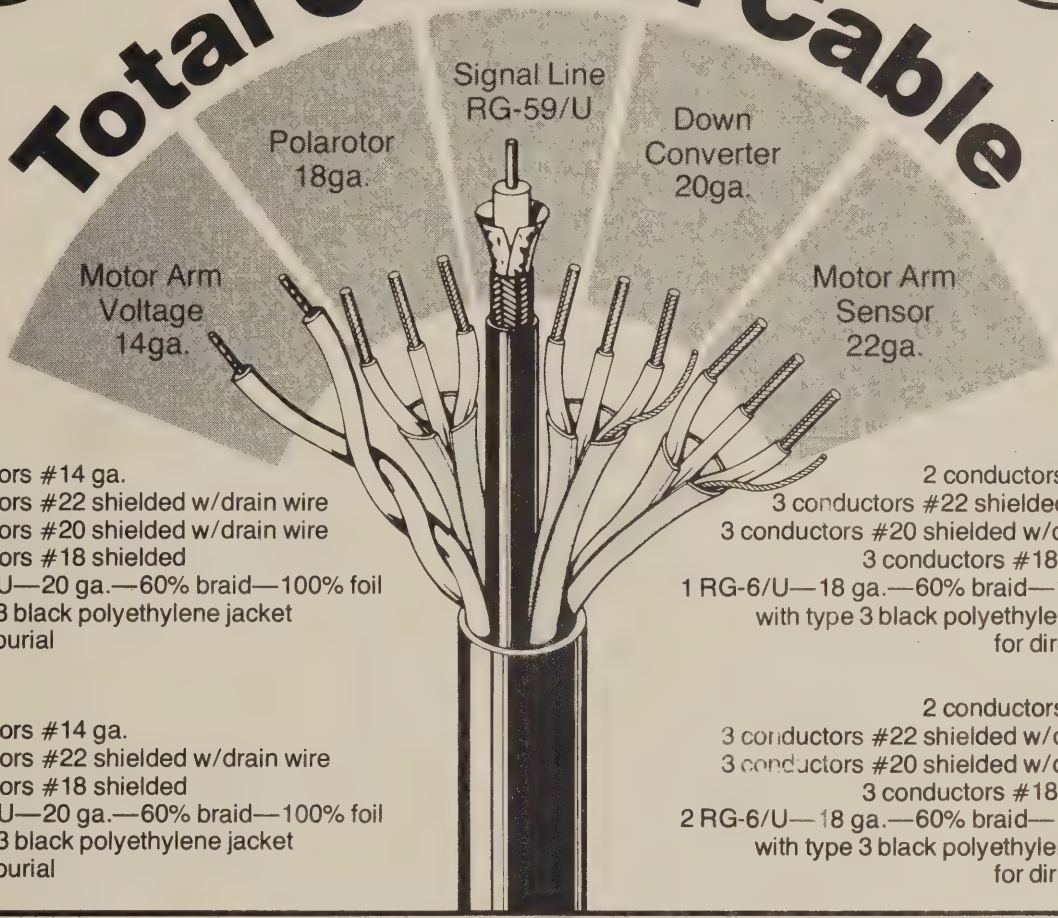

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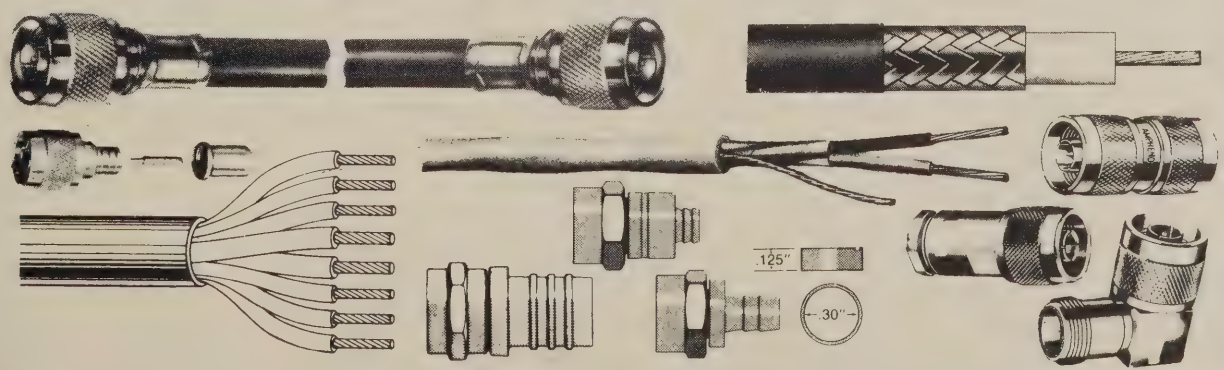


Quaalude prescriptions, many of which were filled by Rose at Edlich Pharmacy.

At some point, however, Asherson, who was caught offering a prescription to a drug enforcement agent, became an informant for the government. Early in 1982, with information supplied by Asherson, some of those involved in the prescription drug network were indicted.

So that the whole scam would not collapse, Witt allegedly plotted to kill Asherson before more information could be released. When Rose heard of the plan, he says he went to the DEA to inform the agency of the murder plot and to turn state's evidence in the investigation. The next day, according to Rose, the people involved in the murder plot were arrested. Witt, Ellentuck, and Rosenberg were later sentenced to 15 years, 13 years, and 10 years in prison, respectively. For his cooperation with the government, Asherson is reported to have spent just six months in jail. He assumed a new identity, and is now practicing medicine in England.

In September 1982, Rose pleaded guilty to his part in the prescription conspiracy before Judge Charles Haight, but sentencing was postponed until after Rose testified in the trials of Witt and others. Rose was on the stand for 37 days in New York's Southern District Federal Court. During the trial his own life was threatened. Rose says the Internal Revenue Service and the DEA assigned armed guards to protect his home 24 hours a day after the brake lines on his mother's car were cut.

Rose got out of the pharmacy business in August 1982. He started BR Satellite in March 1983.

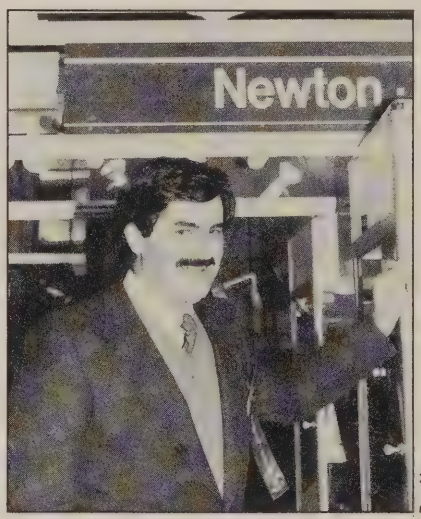
In April 1984, Judge Haight sentenced Rose to a year and a day in jail. Because of the threats against his life, he began serving his sentence on July 15 in the protected wing of a prison in an undisclosed location. Rose's attorneys repeatedly appealed to the court for a reduced sentence, using the success of Rose's new venture, BR Satellite, as evidence that Rose was on the road toward rehabilitation. In his own statements to the court, Rose said he is a different man from the man he was several years ago.

Rose admits that his involvement in the drug scheme was a mistake from the very start, but insists that the past is past. He hopes manufacturers and dealers in the BR Satellite network will overlook his personal indiscretions and continue doing business with the firm.

"It was definitely a mistake, a very, very big mistake which I will no doubt regret for the rest of my life," Rose says. "Nothing at BR Satellite resulted from what happened in 1979 and 1980. I've made BR Satellite something that my family and I are proud of. I feel like I did the right thing when I went to the government, and I have no regrets about doing that."

Cash Flow Problems

Rose's biggest fear upon serving his sentence was that dealers would cease doing business with BR Satellite because of the controversy. Rose's incarceration, however, coincided with an industrywide sales slump and severe cash flow problems at BR, thus adding to rumors that BR Satellite was going under.



Ben Harry

CEO Stevens says business is stable.

As chief executive officer, Stevens worked to squelch such rumors and to assure dealers and manufacturers of the company's stability. Though many manufacturers and distributors found themselves with an oversupply of product last summer, especially LNAs, BR for a time found itself with a shortage of both cash and product.

Because the cash flow problems coincided with Rose's departure, some manufacturers got nervous. Sources claim that BR had reached its credit limit with more than one manufacturer and had asked for the limit to be raised. In July, two manufacturers—ECI and Wilson Microwave—were unwilling to raise BR's maximum limit without receiving some payment on previous orders. Normally on a 15-day net, BR requested a 30-day net, causing a rift between the manufacturers and BR. Skip Grebis, owner of ECI, says he stopped shipping antennas to BR in July. According to Grebis, the rift between ECI and BR may not be resolved without legal action. Grebis claims BR still owes ECI $28,000.

The problem between ECI and BR seems to have begun in July when Nathan Combs, then BR's sales manager, left BR "for personal reasons" and moved to Dallas, Texas. At about the same time, Combs says he talked with Grebis about opening a sales outlet in Dallas from which Combs could continue to sell the ECI antennas.

Stevens maintains that before anyone even knew Combs was leaving BR to work for Grebis, Combs asked dealers to begin buying their antennas directly from ECI rather than through BR. Stevens was upset about the deals Combs was allegedly making because BR had an exclusive on the ECI antenna, and had spent a great deal of money advertising the antenna. Some dealers reportedly told Stevens that Combs instructed them to send certified checks for their antennas. BR used to send the antennas to its dealers COD. In short, BR believes that ECI undermined BR's business relationship with its dealers by allowing Combs to ask dealers to buy direct from ECI.

Combs denies having dealt "through the back door" while working for BR, but prefers not to discuss the rumors further.

Wilson Microwave apparently decided to stop shipping equipment to BR because the distributor again wanted to buy above its maximum credit line. Sources at Wilson claim BR wanted its credit limit raised above $100,000, but that Wilson wanted some payment before it would ship more equipment to BR. Rose says he sent Wilson 200 Norsat LNAs as collateral for a shipment of back-ordered equipment. BR sent the LNAs Federal Express, but Wilson was willing to send BR only what it owed BR in back-ordered equipment. New orders would have to be sent COD.

According to Stevens, problems between the two companies are resolved. Wilson has ceased doing business with BR. Rose contends that Wilson owes BR money for advertising, money that will probably be paid in equipment.

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and its equipment suppliers may have been the result of a knee-jerk reaction to Rose's conviction and fears that the distributor might fold. Few people in the industry, however, even knew about Rose's involvement in the drug scheme until well after Rose had started doing time. BR's cash flow problems seemed to be the major concern of BR's suppliers.

According to Joe Valentino, an independent salesman for BR from June to August 1984, BR's cash crunch was partly due to the move from Bayside, New York, to the new warehouse in nearby Roslyn. Valentino, who says he is reviving JV Satellite, a dealership in Branchville, New Jersey, claims that while he worked for BR, the warehouse was emptying faster than new equipment could be brought in. He claims that in August, BR's supply of equipment was so low it was difficult to back up the 48-hour turnaround on warranty repairs. Without ECI antennas and Wilson receivers, Valentino says he was inundated with calls from dealers who needed product and repairs. He says BR looked to the Nashville trade show last September to generate more cash to buy more equipment.

Cooling Off

Despite the controversy, Stevens says that other manufacturers have stood by BR. MTI, he says, stood by BR and did its part to convince other manufacturers to stay with BR during the rough time. Skeptics suggest, however, that MTI simply had too much invested in BR at the time of Rose's conviction to back out.

"The first and foremost supporter was MTI," Stevens says. "People can say that BR Satellite was such a large distributor that MTI couldn't afford to let business drop. But that's silly. Royal Lamb at MTI could have walked away. He has other distributors to do the job, but he stuck by Ben and lived up to his convictions."

BR replaced the Wilson YM400 and YM1000 with KLM's Sky Eye VIII and Sky Eye X receivers. In place of the ECI, BR now distributes Orbitron antennas. Since the Nashville show, Stevens says business has been stable between BR and its other suppliers. He's confident that BR's network of dealers will continue to grow despite the controversy.

News of Rose's conviction surprised virtually everyone in the industry. To the younger dealers, Rose looked like an enterprising Italian uncle. With his shirt-sleeves rolled, he talked straight and bargained like a vendor in a New York street market. Rose has always been visible at trade shows and accessible by telephone. He offered fair deals, and as a distributor in a young industry, his "future-proof" policies were innovative. He offered dependability and trust, and advertised that fact in the trade journals. Unlike many distributors, he shipped equipment COD, rather than insisting on cash in advance, and promised to replace defective equipment for a full year. Few would disagree that the prices, products, services, and warranties BR offers to dealers are what dealers need more of from distributors.

In an editorial in the August issue of *Satellite DEALER*, Rose tackled one of the more difficult issues facing the dealer—distributors who sell direct to consumers. Disguising his motive, Rose's son contacted 15 distributors to see if any would sell directly to consumers. He found six that would sell direct, and one distributor even offered to supply false tax numbers. Rose lambasted those distributors, calling them "vultures" for breaking the backbone of the industry.

'I've come closer to God since I've been away.'

Positive Results

In September, responding to appeals by attorneys, Judge Haight reduced Rose's sentence from a year and a day to nine months, of which Rose will apparently serve about six months. In a court memorandum, the judge stated that although Rose has served his sentence in a protected compound, he has served with hardened criminals who are also protected for good reason. Ordinarily, Rose would be treated as a "level 1" prisoner, but because population in protected compounds is limited, he has had to serve his sentence with "level 5" and "level 6" offenders—"the most asocial and dangerous members of the prison population," according to Judge Haight. Rose has lost 105 pounds since July.

Rose says he's been treated fairly despite the hardship of being held in "an aura of solitary confinement, but a confinement with other federally protected witnesses." Unlike others in the Federal Witness Protection Program, Rose will not enter "phase two" of the program, which would require him to change his name and start a new life in a new location.

"My attorneys and I believe that the people who threatened my life would have done me harm if I was within the regular prison population," Rose says. "There was more concern for my well being while I was serving my time than while I was not."

Rose believes his experience has had many positive results. While in a Minnesota correction facility for a time last year, he says a Catholic chaplain who visited the witness protection unit helped turn his life around.

"It's really been a story of faith. I've come closer to God since I've been away," Rose says. "I've become stronger because of this entire experience. I believe that with my release in February things I've always taken for granted will be more important. It's a bettering, a cleansing of myself, and that's going to have an effect on my business. All this might not have happened had I not despaired, had I not come to jail."

Stevens claims that some distributors are making hay of Rose's situation, calling dealers and telling them to be wary of dealing with BR. But BR seems to have survived the worst months. With the most difficult days behind him, no one believes more than Rose that the fate of BR Satellite will be determined not by prejudice but by the marketplace. Rose says BR has recently signed a sales agreement to be the East Coast distributor of Panasonic satellite equipment beginning in February. Though plans for a new BR Satellite branch in Salt Lake City have been scrapped, Rose says the company may instead open a branch in Denver or Phoenix, possibly in March.

"There are a certain number of people who are going to call me a dirty, no-good SOB," says Rose. "That may be a certain percentage of the people I deal with. But others will stand behind me and support me for what I am now." □

Interpreting the Cable Bill

Congress affirms the legality of private reception but leaves many questions unanswered.

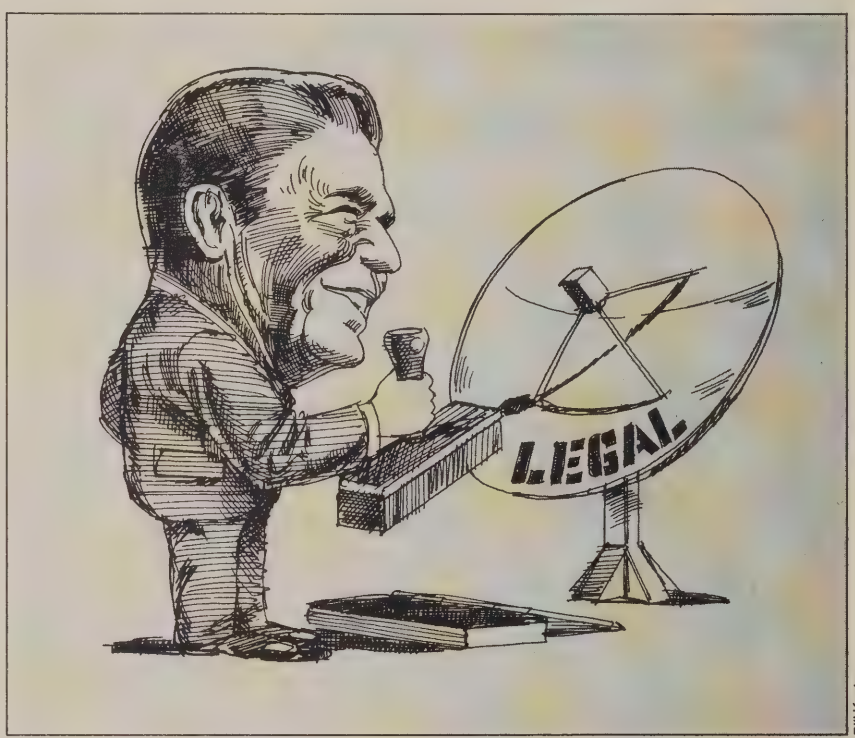
BY BOB SCHERMAN

THE END OF 1984 SIGNALED A NEW beginning for the TVRO industry. On December 29, a new federal law went into effect that affirms the right of individuals to manufacture, sell, and use private earth stations.

The measure, which was a last-minute amendment to wide-ranging congressional legislation (Public Law 98-549) that set new federal regulations for the cable TV industry, established an exemption to the piracy clause of the Communications Act of 1934 for individuals who intercept "satellite cable programing for private viewing," so long as "the programing received is not encrypted." The measure also applies to people involved in "the assisting (including the manufacture and sale) of such interception or receipt" of unscrambled signals.

But the law also states that the exemption would only be triggered if programing services do not set up a "market system" for receiving payment from people for viewing unscrambled programing. In addition, it fixes new, steeper penalties for unauthorized commercial use of pay-TV signals. And "the importation, manufacture, sale, or distribution of equipment by any person with the intent" of assisting people in violating the law would be treated "in the same manner" mandated for the individual who actually receives the programing illegally.

Such a conviction would be considered a criminal offense, punishable by a $1,000 fine or six-month prison sentence—or both. Any person convicted of using a signal "willfully and for the purposes of direct or indirect commercial advantage or private financial gain" could be fined $25,000 or be sent to prison for up to one year—or both—for the first conviction, and $50,000 or two years in jail—or both—for subsequent convictions.



Bill Kastan

President Reagan put a definitive end to claims that dish owners are pirates.

The law also allows "any person aggrieved" by a violation—program owners and suppliers, for example—to file a civil suit to gain an injunction that could stop the sale of equipment used to receive signals illegally or prevent the reception itself. Programers would also be able to ask for damages in their civil suits that would be computed according to their losses and the violators' profits, or they may choose to ask for an amount ranging from $250 to $10,000 "for each violation involved." If the court finds that the violation came under the willful financial gain category, the damages could be increased to as much as $50,000.

The provision permits a "good faith" exemption to the penalties, however, that allows a judge to reduce the fine or damages to as little as $100 if "the court finds that the violator was not aware and had no reason to believe that his acts constituted a violation." The chief sponsor of the amendment in the Senate, Barry Goldwater, R-Arizona, said in a statement accompanying the bill that the new penalties should only apply to those who violate the law "for the purpose of private financial gain [and] not apply to viewers who do no more than receive and view signals in their own dwelling for personal enjoyment."

Goldwater also said that a dealer or manufacturer of equipment should only be held in violation if he "knowingly and willfully" assisted someone in breaking the law, not for merely

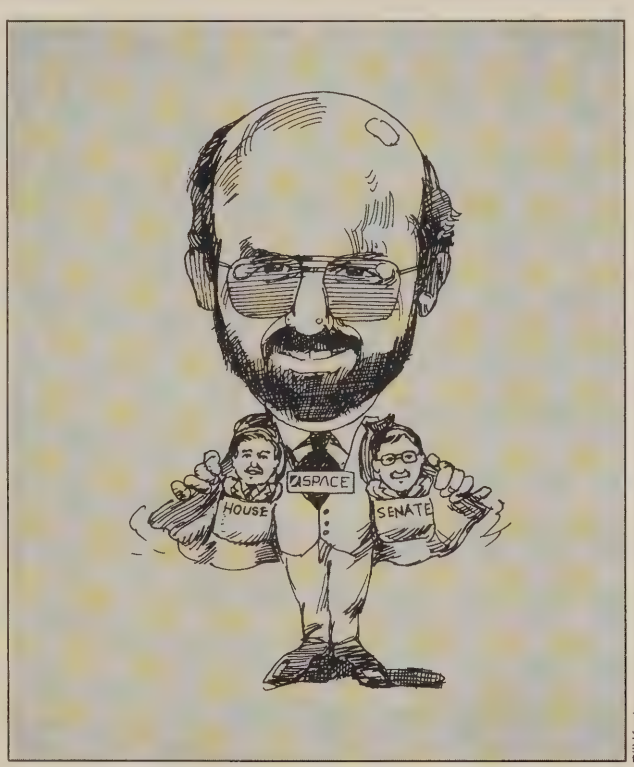
selling equipment that might be used illegally. Thus, a dealer might protect himself simply by notifying customers that they must meet certain requirements to legally receive certain signals. Also, it is unlikely that this or any other law will make it easier to prove that a person is watching a certain signal at a certain time.

With the hectic hours leading up to passage of the bill behind him, Rick Brown, counsel to SPACE, said the satellite provision was a major victory for the industry because dish owners "who feared there was some gray cloud of dubious legality involved" with their TVROs could now be reassured to the contrary. "This clears up," he said, "once and for all, [the] right to have an earth station." He added that dealers won't "have to make excuses anymore" to potential TVRO customers; they "can just say it's legal." Moreover, Brown said the provision should help the industry gain access to print and electronic advertising outlets that were previously hesitant to accept TVRO ads because of legal uncertainties.

The dramatic inclusion of the amendment covering satellite viewing occurred in the final hours before Congress adjourned last October. In many ways, the amendment's journey paralleled that of the landmark cable legislation it was attached to—a bill that hinged upon the up-again-down-again negotiations between the National Cable Television Association and the National League of Cities. (In fact, various problems threatened to kill the cable bill just hours before it passed.) Negotiations between SPACE, representatives of the Motion Picture Association of America (MPAA), at least two Hollywood studios, HBO and other cable services, the networks, and professional sports interests were conducted through lawmakers and their staffs.

It was clear from the outset that any amendment would not simply be a carbon copy of either of the two stand-alone TVRO bills introduced last May—neither of which had any real chance for passage because of time constraints and strong opposition. (For details of S. 2437 and H.R. 5176, see the May and August issues of *Satellite DEALER*.)

Though it was more than clear that the amendment would not be as beneficial to the industry as the two separate bills would have been, Brown pressed on, hoping to get legislation passed that would provide immediate federal affirmation of the industry's long-held position that TVROs are legal. "You take what you can get," said Brown. "The Gore bill [H.R. 5176] was a wish list. It's everything we could possibly desire. Very seldom in the legislative process does anybody get their wish list. What we got was the most fundamental precept that was necessary for this industry to jump into a new generation, and that is its basic legality."



Bill Kastan

Credit Rick Brown with a "master stroke of lobbying."

What the motion picture industry and its allies got from the bill is still open to debate. A number of Washington observers suggested that Hollywood realized that the TVRO is here to stay and only agreed to an amendment that is not all-inclusive because it doesn't permit the "carte blanche" reception of signals. In return, they got a law that greatly restricts the use of satellite signals in commercial settings and greatly strengthens the piracy measures that cover STV, MDS, and cable.

Both Brown and Jack Valenti, president of MPAA, rejected such an assessment, however. Valenti said that "all [MPAA] got was what we wanted in the first place, protection of ownership rights" and that the bill "was a victory for fairness, for equity, and for the rights of private property owners." (For an in-depth discussion of TVRO issues with Valenti, see page 113.)

The TVRO industry didn't "give up one thing," said Brown. "We've always supported theft of service provisions because we've always taken the position that we're not trying to take these signals without paying fair compensation. We offered those piracy measures in 1981 in exchange for what we just got. We have always offered that."

Tom Rogers, counsel to the House Telecommunications Subcommittee and a key participant in the negotiations, said the bill represented "good public policy" that is "the outcome of a compromise" between industries. He said the new piracy laws should not be viewed as a "downside" for the TVRO industry "because everyone has agreed for a long time that [theft of service] is a horrendous practice that should be stopped." Rogers added that the bill is "an amazing step forward" for the TVRO industry, and "credit should go to Rick Brown, who did an amazing job in steering this thing to the point that it got. I consider that a master stroke of lobbying."

At this point, the long-term impact of the legislation is unclear. SPACE and many industry experts do not expect any major programing service to establish a payment mechanism for unscrambled signals—a prediction that, if right, would mean that individuals could watch those signals without obligation.

While the motion picture industry and its supporters suggested that program services would explore the possibility of implementing a "feasible" method of collecting payment for

unscrambled signals, none of the services contacted by *Satellite DEALER*—WTBS, CNN, CNN Headline News, USA Network, MTV, Nickelodeon, WGN, WPIX, KTVT, WOR, Lifetime, and C-SPAN—said they planned to institute any kind of payment scheme in light of the bill.

The difficulties of setting up a payment mechanism for unscrambled signals are obvious. Even if a common billing service were set up for a number of services, it still might not be economical to deal with TVRO owners—or to ensure that all were paying for each signal. Any package of services might include some that individuals would not want and would not be willing to pay for.

Nevertheless, if an attempt is made to set up a system, Brown said SPACE will closely monitor the situation to make sure the programers do not collectively set prices in violation of antitrust laws, and that they live up to the requirement outlined in the bill's legislative history which requires that any payment system be set forth "in good faith," be "truly operational," and "not [be] a mere sham or avoidance scheme to deny individuals the opportunity to privately view" unscrambled signals.

The remote likelihood of a workable payment method for unscrambled signals surfacing would appear to leave the battle over satellite signals right at the point it was before the legislation went into effect. Spokesmen for those services that have announced that they plan to scramble their signals—including HBO and Cinemax, along with Showtime and The Movie Channel, and ESPN—said their plans will not be changed because of the legislation. In fact, according to HBO representative Lyn Hentinger, HBO is now planning to scramble its signal this spring, after its distribution of descrambling equipment to affiliates is complete.

The move to scramble has been expected by most in the TVRO industry, though HBO's many delays have produced an "I'll believe it when I see it" attitude. Yet if a few services do scramble, many of the other major ones—including basic services—might quickly follow suit, enticed by the notion that they, too, could share in any new revenues generated by the TVRO market.

Brown said he somewhat expected the programers to scramble because "if they want protection, scrambling is the way to do it." He also reiterated that the TVRO industry is always ready to discuss the issue with programers, so long as any negotiations take place in the same "good faith" environment now in place for dealing with unscrambled signals. But this new law in no way requires programers that scramble to provide service to the TVRO owner, and Brown, for one, isn't convinced that programers will voluntarily enter into such good-faith negotiations with the industry after they scramble—despite statements, most notably from HBO, that an effort will be made to provide service to the backyard dish. "Maybe they're paying lip service to the concept of dealing with [the TVRO] market," he said. (For more on HBO's scrambling plans, see the Trade Show Wrap-up on page 44.)

Without question, the fight is far from over.

For their part, the programing industry must first come up with a feasible, standard method of scrambling—which is apparently not an easy task—if they intend to deal with the TVRO industry in good faith. Then, theoretically, decisions could be made to deal with the issues of service packages, payment methods (e.g., a common billing mechanism or perhaps a point-of-sale fee), cost to TVRO owners, and descrambling equipment and where it would be obtained from. The process of making any of these decisions could involve a precarious trip down the antitrust law road.

Another potential problem for the TVRO industry lies in the fact that the newly enacted law does not address copyright law considerations in any way. A number of Washington insiders have criticized the bill for not dealing with copyright matters, and it is entirely possible that Congress will examine the whole satellite-copyright question from scratch in the next few months.

In addition, the bill does not cover the interception of network feeds, does not begin to address the ever-growing problem of zoning laws that deter TVRO installations, and only deals with the use of signals in commercial settings in terms of increasing the penalties for such use—not setting up guidelines for businesses to secure viewing rights.

But the bill should put to rest, for the most part, the much-publicized suit brought against a satellite dealer by two Wichita, Kansas, cable companies. Known as the "Starlink Suit," the case has sent shivers through many in the industry because it sought to ban TVRO sales to the public on the basis that they were being used to violate Section 605 (which is now Section 705) of the Communications Act. Since it is now legal to receive certain satellite signals, both sides agree that the primary part of the suit will be dismissed. SPACE has filed for such a dismissal on Starlink's behalf, and it is possible that the only issues left to be settled—perhaps out of court—are the possible damages for past practices, Starlink's countersuit, and how the TVRO dealer will represent his equipment in the future.

Without question, the fight is far from over. In the best of all possible worlds for the industry, said Brown, the programing and TVRO industries would sit down and come up with fair solutions for all the outstanding problems. Some programers might actually decide that the TVRO market is the easiest way to add viewers to their now-stagnant subscriber rolls.

The worst possible scenario for the industry could include a steadfast refusal-to-deal attitude by program services after they scramble. There could also be agreements between programers to set high prices for TVRO owners, and there could even be a united, albeit subtle, effort made by all of the TVRO industry's powerful opponents to discourage dish sales through zoning, copyright, or new communication laws. Any or all such efforts would undoubtedly result in protracted battles in the nation's legislative bodies, the courts, and Congress.

The TVRO industry must now wait for the next move by program owners and services. The words SPACE used to triumph its victory last October should provide some comfort during the long months ahead: "For once and for all, all home satellite stations will be legal. There will be no turning back." □

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Shrouding Antennas

An experienced urban installer takes an innovative approach to eliminating terrestrial interference.

BY GREGORY FRAZIER

THE MINUTE ROB HURWICH OF Commercial Satellite Systems stepped onto Megaphone Company's downtown San Francisco rooftop and saw the MCI tower with its cluster of microwave antennas across the street, he knew Megaphone's TVRO installation would be no piece of cake.

The site was in the direct path of several major metropolitan microwave users, and terrestrial interference (TI) was heaviest in the morning hours—the time when Megaphone needed signal the most. To further complicate matters, the roof was cluttered with a huge water tower and several other metal structures that would reflect ambient TI into the antenna's sidelobes.

San Francisco's microwave traffic is heavy. Megaphone Company is one of the country's largest pay-per-call telephone operations, with about 20 "976" telephone prefixes in seven markets. For a per-call charge of 55 cents, billed to the caller's phone, a caller can dial Megaphone to hear his horoscope, a Dial A Joke, Dial A Children's Story, Dial A Rock Hotline, Dial A Michael Jackson Hotline, or Dial A Soap Opera Update.

The Soap Opera Update is among the most popular: there are actually several soap opera updates, with changes made daily. A staff of writers monitors the soaps, then writes 60-second capsule condensations of the day's episodes. The recordings go on line immediately after the programs sign off the local airwaves. Under an informal agreement with the networks, the information can't be released until the soaps have aired locally.

Megaphone needed to access the early soap opera feeds on each of the three major networks: ABC (Telstar 301, tr. 10), CBS (Comstar 3, tr. 10), and NBC (Satcom 1, tr. 8). Megaphone wanted total frequency agility across the entire satellite arc, and expected commercial-quality service from relatively inexpensive home TVRO equipment. And like most buyers, Megaphone wanted it all on a shoestring budget.

Gregory Frazier

Commercial Satellite Systems offers a kit to shroud most brands of antennas.

Hurwich took the initial site survey readings from his portable Luly antenna. Just as his considerable experience in urban TVRO installation had led him to suspect, all three networks showed considerable TI. ABC and CBS were the worst: the video showed heavy degradation to complete wipeout. The NBC signal was comparatively clearer: only moderate-to-heavy degradation due largely to reflected TI.

One of the first problems Hurwich had to overcome was getting the antenna up to the fifth-story roof of a building without an elevator. He selected a 12-foot Paraclipse antenna and assembled it on the roof. He added a Dexcel 1100 receiver with a 90-degree LNC, inserting 60- and 80-MHz switchable IF notch filters made by Standard Communications, and a tunable IF bandpass filter with built-in IF amplifier from Phantom Engineering. The system was anchored to a 10-foot-by-10-foot concrete pad.

This combination worked reasonably well to bring in the NBC soaps, but

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In short, we will help prepare you today to take advantage of the opportunities of tommorow. So call us now, just ask for Dealer Development. It's the sure way to the complete picture.

Best wishes for a successful future,

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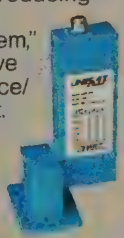

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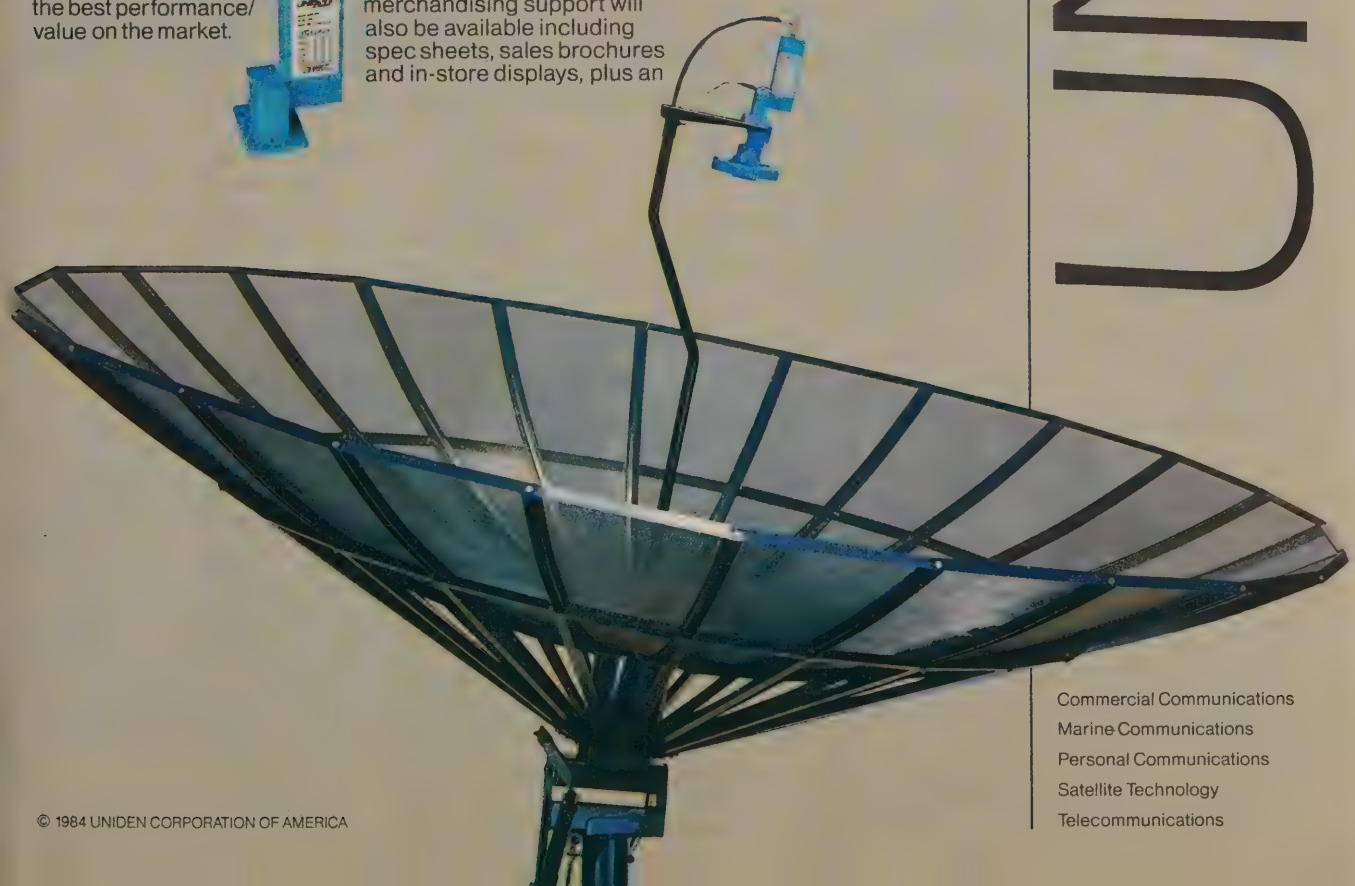

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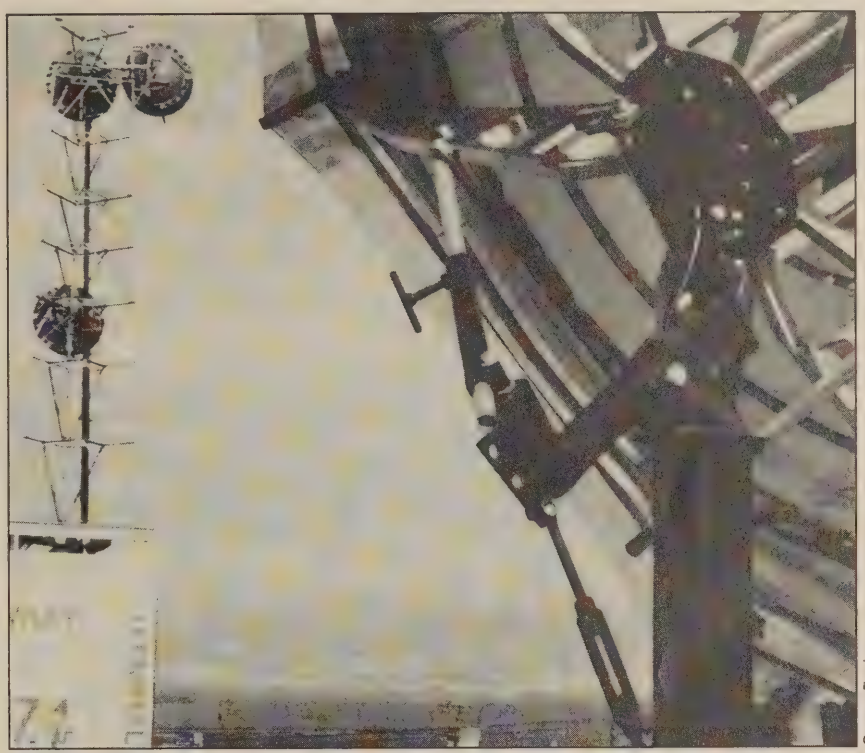
failed to pick up the wiped-out transponders on all three birds.

In order to access the wiped-out transponders, Hurwich drew on his experience in downlinking urban teleconferences. He added a single-transponder, tunable microwave bandpass filter and a tunable microwave notch filter from Microwave Filter Company, and set up portable screens to block out the TI being reflected into the dish by the water tower.

To accommodate the microwave filters, Hurwich changed the receiver to a Dexcel 2100 with a Cal Amp 85-degree LNA and separate downconverter. This combination produced adequate signals on all channels. At that point, Megaphone officials decided to install two more earth stations to have 24-hour access to all three networks simultaneously. The two new systems would use the same hardware combination as the modified NBC system.

As noted earlier, TI was especially heavy on CBS and ABC. In an attempt to solve the TI problem, yet avoid excessive screening, Hurwich added shrouds to the dishes. The shrouds



Gregory Frazier

The MCI tower across the street would have sent many installers packing.

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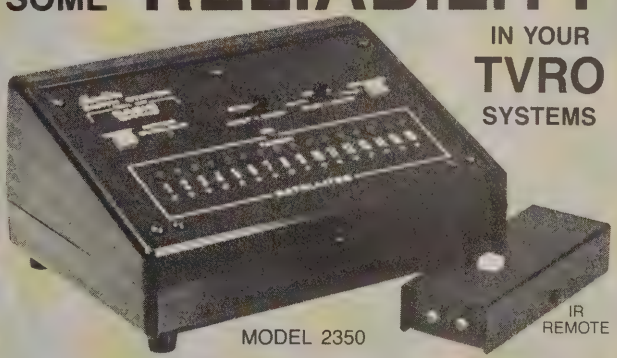

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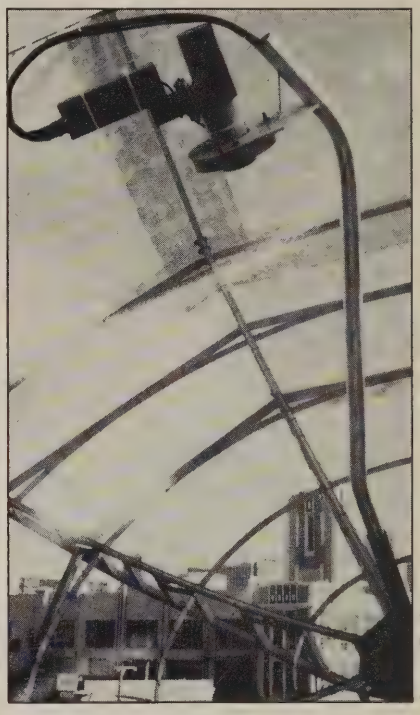
were custom made from 3/16-inch hardware cloth and aluminum frames, and were adjustable to depths of 2 to 4 feet.

The shrouds barred TI from the antenna's sidelobes and improved the system's signal-to-noise ratio. Some buzzing remained on the CBS audio, however, because that dish looked most directly at the MCI tower. During the initial testing and evaluation phase of the installations, Hurwich had placed two 5-by-15-foot portable teleconference microwave attenuating screens between the antennas and the MCI tower. He decided to leave these screens in place to shield the systems from direct interference.

Total cost for the three Megaphone TVRO systems was less than $10,000 each—two to three times less costly than some commercial systems. Hurwich firmly believes that certain home TVRO techniques and equipment can be effectively used for commercial applications.

"Some of the most cost-effective approaches for eliminating TI in urban environments have evolved from the home TVRO market," Hurwich says. "Shrouding is just one example of an innovative technique that combines commercial standards with home TVRO equipment."



Gregory Frazier

Shrouds bar TI from antenna sidelobes.

'Shrouding can be an alternative to screening.'

Hurwich charges $175 to install a $500 shroud kit on a 12-foot Paraclipse. Commercial Satellite Systems offers kits for all other sizes of Paraclipse antennas, and the kits are easily adaptable to most brands of antennas by using special mounting brackets.

"Shrouding can be an alternative to screening," Hurwich says, "especially if aesthetics are a major consideration and several screens are needed. For the Megaphone installations, shrouding eliminated the need for about

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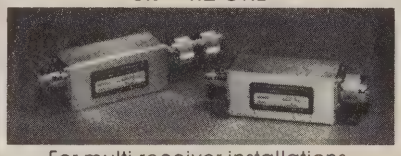

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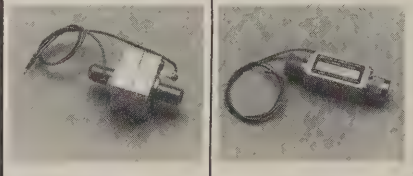

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2,000 square feet of screens."

Build Your Own

Hurwich advises satellite dealers who are experiencing TI problems to try IF traps first. "Then experiment with screens or test shrouds, or a combination of both," he says. "Shrouding will clear up TI problems about 10 to 25 percent of the time. If shrouds or screens alone don't solve the problem, you may have to add microwave filters as well.

"To experiment with test shrouds, you'll need enough 4-foot aluminum mesh window screen to encircle the entire circumference of the dish—forming a circular shape that faces that satellite—and four to eight 12- to 16-foot 2-by-2s. Position several 2-by-2s around the dish to provide adequate support for the test shroud. One end of the 2-by-2s should be embedded in the ground, then secured to the edge of the dish with rope. The screening is then wrapped around this makeshift frame.

"Be sure to lightly roll the top edges of the screen away from the dish to minimize scattering and to avoid the 'knife-edge' effect that will bend TI into the dish. I may test four or five times with shrouds for every permanent installation."

Hurwich first saw shrouds being used on a San Francisco commercial broadcast dish in 1981. To date, he has retrofitted about six home TVRO systems with shrouds.

"The Megaphone install was the first time I've used shrouds from the beginning of a job," he says. "Formerly, they were used to fix an existing TI problem. Shrouding only makes sense when TI is entering through the sidelobes. It won't improve the dish itself. I suspect that shrouding might offer an effective solution to the reception problems of smaller dishes due to 2-degree spacing."

Hurwich describes his innovative service as "antenna site enhancement for adverse microwave situations: shrouds, screens, and filters."

For information on TI shrouds, Hurwich may be contacted at: Commercial Satellite Systems, 2955 Russell St., Berkeley, California 94705, (415)848-4331. □

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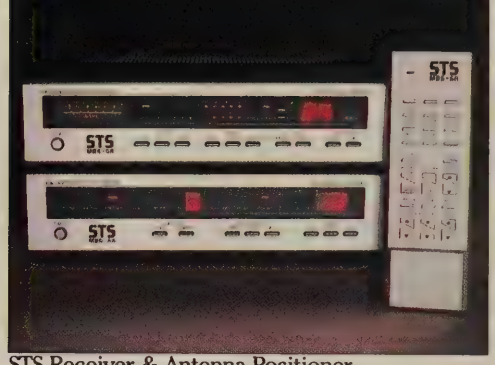

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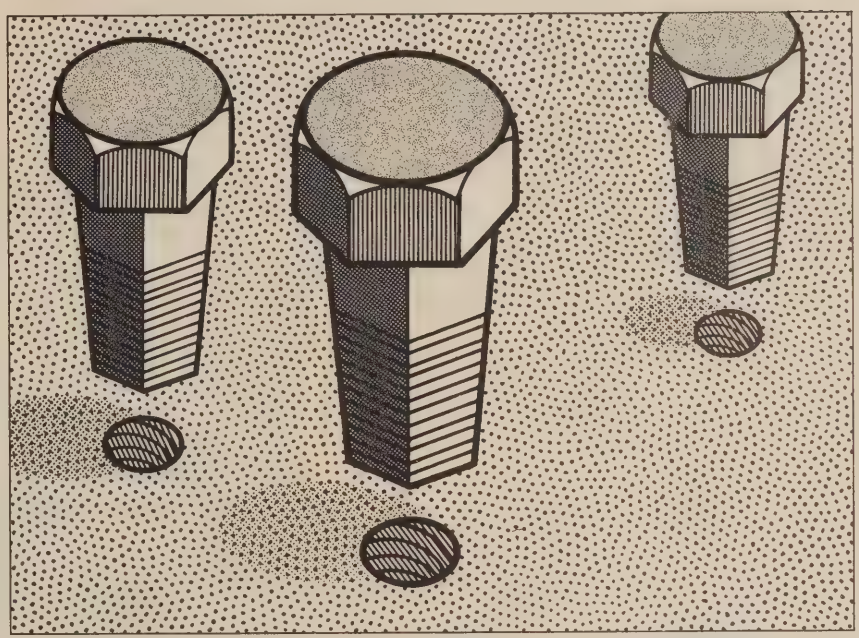
Playing Matchmaker

Selecting compatible components will become less difficult—but much more important—as the industry matures.

BY KEITH LARSON



Square pegs and round holes: TVRO components are often mismatched.

WITH THE PASSAGE OF H.R. 4103 BY Congress, the home TVRO industry has finally been recognized as a legitimate business. In Senator Barry Goldwater's words, "In the brief five or six years this technology has been available, nearly one million home satellite antennas have been sold. This is a tremendous accomplishment due originally to the personal initiative and skills of a few enthusiastic hobbyists."

Following these "enthusiastic hobbyists" came the entrepreneurial dealers and distributors who deserve credit for the continued growth of the industry. Unfortunately, though, these individuals were also forced to function as systems engineers because no manufacturer had yet produced a complete, low-cost TVRO system. These early dealers/systems engineers often applied a simple principle: combine the least expensive components that would produce a watchable picture. It seemed everyone made a fiberglass dish; the dealer then pieced together the rest of the system, with a feed and LNA here, a mount there, and the receiver of the month. And while each manufacturer touted his particular product, if the system failed to perform properly, the dealer was left trying to figure out what went wrong.

As the industry matures, these dealers are either educating themselves or being replaced by a new breed of dealer that realizes the importance of integrating the many diverse technologies involved in TVRO system design. This new breed realizes, for example, that the antenna requires a mount that won't distort its shape and a feed designed to illuminate it uniformly. These dealers have also learned the importance of matching impedances between feed and LNA (and between other system components) to prevent serious amplitude and phase distortion of the received satellite signal.

The complexity of the television signal imposes very stringent requirements on the transmission system. Distortion, poor frequency response, and transmission irregularities all tend to degrade the quality of the final image.

Ideally, the TVRO equipment should be free from amplitude distortion and nonlinear phase shift over a 30-MHz bandwidth at RF (and IF), and from almost DC to at least 4.5 MHz at baseband, a frequency range of over 18 octaves. These anomalies are almost always associated with variations in the amplitude; frequency response of the system, particularly abrupt changes or transitions, unequalized narrow-band IF filters, and nonlinear demodulators. The resulting nonlinear phase shift delays some frequencies more than others, with the result that the signal waveform is distorted.

Color television is particularly vulnerable to differential phase and gain. Simply speaking, differential gain means a change in the gain of the system as a result of signal level variations. In a color television broadcast, the presence of differential gain may cause some colors to appear unsaturated or washed out, while others might appear excessively brilliant. These extremes may be produced merely by changes in the brightness of various scenes.

Similarly, differential phase refers to the phase shift that occurs as a function of the video signal level. This is important because the colors that appear on the screen are determined by the exact phase relationship between the color burst and the color subcarrier. Differential phase causes color distortion that is not constant; it varies according to the brightness of

the scene. Thus, a crimson object might change to orange or some other color if the overall illumination level of the scene were to change. Although the color subcarrier is at a frequency of approximately 3.6 MHz, phase modulation of the carrier produces sidebands as low as 2 MHz and as high as 4.2 MHz. If some of these sidebands are delayed more than others by nonlinear phase shift, the resulting colors produced at the receiver will be distorted in a noticeable and objectionable way.

Satellite dealers will soon have another important reason to pay close attention to system component matching. As HBO and other premium programers warm up to the backyard TVRO market and begin to offer their scrambled packages for sale, many TVRO owners who sign up for these services may find that the scrambled signal is far less tolerant of their mix-and-match systems than the unscrambled signal was.

Need for Rigid Standards

As one of the new breed of satellite dealer, you have every right to ask manufacturers to substantiate their performance claims, and to demand a more uniform basis of comparison. Some areas of greatest need are as follows:

LNAs. Noise figures should be given as the maximum across the band, not the minimum, as many are. Also, for those LNAs that have no isolator in their front end, the noise figure should be stated for various source (feedhorn output) VSWRs; the VSWR at which the unit becomes unstable and begins to oscillate should be given as well.

An antenna range pattern should be supplied by the manufacturer upon request.

This situation can be aggravated by low winter temperatures, which tend to increase LNA gain.

Feeds. The insertion loss of the feed or polarization device (ferrites, etc.) should be stated, along with the resultant decrease in overall performance (G/T). This is very important because any loss at this point generates noise. Some examples: a 0.2-dB insertion loss in the feed reduces G/T by 0.7 dB; a 0.4-dB loss converts to −1.3 dB in G/T, which is equivalent to reducing the antenna size from 10 to 8.6 feet in diameter.

Input and output return loss or VSWR should be stated. An input and output VSWR of 1.55:1 (13.5 dB return loss) translates into a loss of 0.4 dB and a reduction in G/T of 1.3 dB. Even the relatively good input/output VSWR of 1.3:1 (18 dB return loss) converts to 0.15 dB loss and produces the phase distortions previously discussed, and contributes to isolatorless LNA instability.

Antennas. RMS (root-mean-square) surface tolerance with respect to a perfect parabola should be stated along with the method used to mea-

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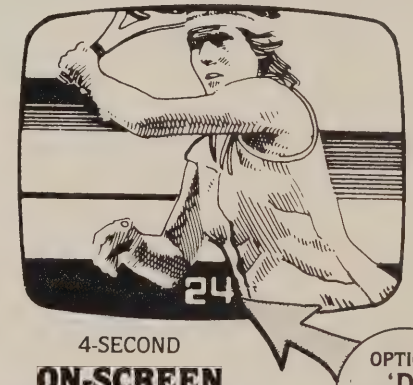

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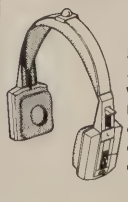

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sure it. A rule of thumb design goal is λ/16 or less, which at 4 GHz is around 0.187 inch. Contrary to popular belief, a tighter tolerance would not produce a significant increase in gain, although it would allow the dish to be used at higher frequencies.

An antenna range pattern should be supplied by the manufacturer upon request. (If a feed is not included with the dish, the patterns should state which feed was used.) Range patterns can tell many useful things about an antenna. For example, the gain can be calculated approximately from the −3-dB beamwidth by the relation:

$$G \cong 10 \log \left[\frac{27{,}000}{(\theta\ 3\ \text{dB})^2} \right]$$

(where θ 3 dB is in degrees).

Other things a pattern should indicate are cross-polarization isolation and FCC limits for 2-degree spacing. Furthermore, a good systems engineer should be very skeptical of antenna performance claims if range patterns are not available.

Receivers. Static threshold should be stated as a function of carrier-to-noise ratio (C/N) and bandwidth. Many receiver manufacturers improve their threshold simply by reducing the IF bandwidth, which if carried too far can cause truncation noise (the "measles" that appear in saturated colors), and amplitude and phase distortion. Therefore, to be meaningful, the noise bandwidth must be stated (which may be different than the 3-dB bandwidth). If other terms are used, such as "C/N sensitivity," they should be defined.

While virtually all receiver makers claim 40 dB, few if any meet it.

Energy dispersal rejection is a particularly abused specification. While virtually every receiver manufacturer claims 40 dB, few if any actually meet it—but who cares? Twenty dB is sufficient.

The video linearity parameters are never even mentioned, although they are at least as important as threshold. A full discussion of these is beyond the scope of this article, so suffice it to say that many of these can be measured using a waveform monitor or oscilloscope connected to the video port and utilizing the VITS (vertical interval test signal) transmitted on many transponders. These parameters include gain/frequency distortion, chrominance to luminance gain and delay inequality, and differential gain.

As the industry matures, it will become more important—not less—to pay attention to the technical side of the business. Ironically, more technical consideration is often given to purchasing a home stereo system than a TVRO. If dealers are to make intelligent choices about TVRO products, everyone in the industry must at least begin to speak the same language. □

Keith H. Larson, a microwave systems engineer, is manager of special projects for Amplica.

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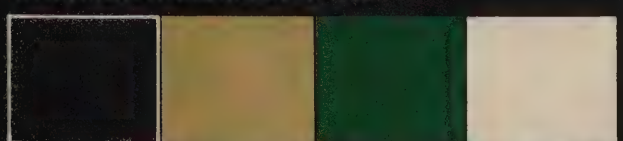

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A New Balancing Act

They call it the Tax Reform Act of 1984, but it contains considerably more tax than reform.

BY RICHARD WEATHERINGTON

WHEN CONGRESS ENACTED THE Tax Reform Act of 1984, satellite dealers and other small-business men were startled to find more tax than reform in its pages. Here are just a few of the provisions that may cause you some concern.

Start-up Costs. Generally, you must have an active business operating before you can claim most business deductions. Many dealers have claimed such pre-opening costs as rents, employee training, and investigation costs as current deductions, but the new law makes it clear that these costs must be capitalized and recovered when the business is later disposed of.

You do have the option, however, to write off pre-opening costs over a 60-month period or longer. You must elect to do this by the time you file your firm's first tax return, so talk to a tax adviser before you open for business and set up the amortization.

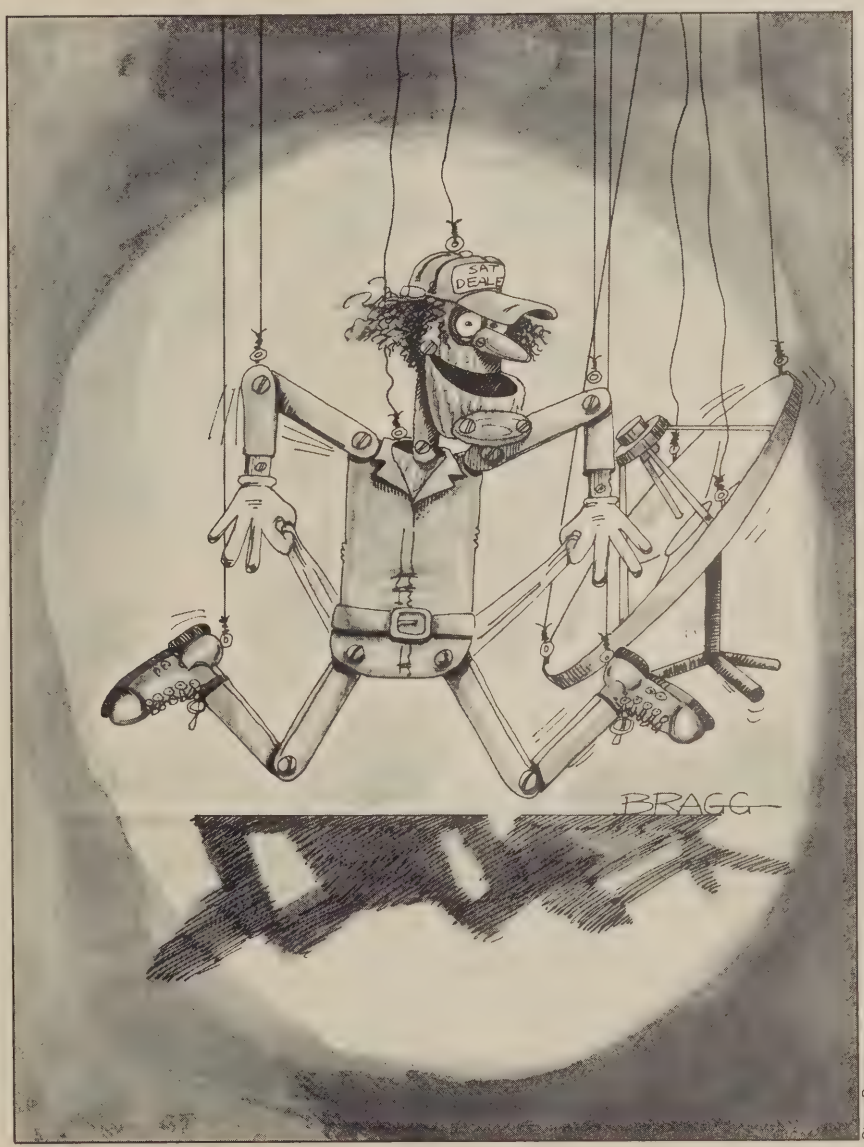
Deductible interest, taxes, and research costs are not considered deferred expenditures and are not included under these rules.

Expensing. Satellite dealers would find life much less taxing if they could take a current write-off on all of their business equipment. Generally, though, such equipment costs must be recovered over several years through depreciation.

The 1981 tax law allowed a dealer to write off up to $5,000 in equipment purchases per year. That dollar limit increased to $7,500 at the start of 1984, but without batting an eye, Congress rolled the limit back to $5,000. The limit will not rise again until 1988, when it will return to the 1984 level of $7,500. Generally, the rollback will hurt satellite dealers in the 33 percent or higher tax brackets.

Income Averaging. The upswing of the American economy, the decrease in satellite system prices, and the passage of satellite viewing rights legislation could combine to make the TVRO market explode. While this is what everyone in the industry has been hoping for, it could make life harder for dealers who suddenly experience a sizable jump in income.

The old tax law permitted income averaging (which enabled dealers to spread the tax burden and lessen the



Steve Bragg

Strings attached to tax deductions might frustrate some satellite dealers.

impact of a sudden increase in earnings) when income jumped to 120 percent of the previous four years' average, with a $3,000 threshold. To use this spreading technique now, you must reach 140 percent of the previous three years' average income and meet the $3,000 threshold. This change will make income averaging harder to use, and the results when it is used will be a lot less attractive. An income-averaging situation that yielded a savings of $490 under the old rules, for example, will now yield a savings of just $8.

Mixed-use Property. Like income averaging, writing off property used for both business and personal needs is now more difficult and the results less rewarding. The new tax law adds restrictions that may cause problems for some dealers.

1) When you use your car for business as well as personal errands, you may write off a portion of the car, use the expensing option, and claim the investment tax credit. If business use of the automobile does not exceed 50 percent, however, you will not be allowed to claim the investment tax credit, expensing will be out of the question, and depreciation will be extended from three years to five. Furthermore, in order to keep all the tax benefits you may be entitled to, you must exceed 50 percent business use for the first two years you're in business. Fall below that threshold and the benefits will be subject to recapture.

2) Computers, trucks, airplanes, other transportation equipment, entertainment and recreation property—and whatever else the IRS may wish to add to the list—are also subject to the 50-percent restrictions. Failure to reach the threshold will mean loss of investment tax credits, and with most such equipment, depreciation will be spread over 12 years instead of five. The IRS will be watching mixed-use property, so be careful.

Keeping records. Satellite dealers and the IRS have had a running battle over what constitutes "adequate" records. The new tax law clearly gives the IRS the upper hand. If records are not considered adequate according to the new rules, deductions based on those records will be all but impossible.

The new code requires that records be kept contemporaneously with expenses, not reconstructed from memory a month or a year later. These new rules apply to:

1) Travel expenses while on business away from home; for local business travel and for the production of income.

2) Business gifts and entertainment expenses.

3) Investment tax credits and accelerated cost recovery deductions claimed on mixed-use property.

The IRS is putting the squeeze on small-business owners.

Business property must now be written off over 18 years.

Tax preparers are required to advise you that your records must be contemporaneous, and they will ask for written confirmation certifying that you do possess records to support your deductions. If you fail to provide such confirmation, the tax preparer will not sign your return. Confirming that records exist when they do not may subject you to fraud charges. To add even more muscle to the new requirements, you can be hit with a negligence penalty if you underpay your taxes because you claim a credit or deduction for which adequate records do not exist.

Real Property. With much fanfare and back-patting, Congress revolutionized the way depreciation is treated when it passed the new Acceleration Cost Recovery System (ACRS) in 1981. ACRS quickened the write-off for business equipment and reduced the write-off period on real property to 15 years. But faced with a burgeoning federal deficit in 1984, Congress took another look at the write-off period for real property: business property must now be written off over 18 years, placing a greater burden on dealers who buy their own buildings.

Estimated Taxes. Having to look ahead and estimate business profits a year in advance has always caused problems for dealers—especially since there are penalties for not guessing correctly.

Before, dealers who were subject to alternative minimum taxes that are imposed on large capital gains and certain other deductions were not required to include that tax when computing the estimated tax. The alternative minimum tax will now have to be included.

The number of ways a dealer can avoid the underpayment penalty has been reduced. You will be able to avoid the penalty if your payment equals or exceeds 80 percent of the tax due, if it's 100 percent of your tax on last year's return, or if it's based on 80 percent of the tax computed on an annualized taxable income, alternative minimum tax, and self-employment income.

You can use these provisions to figure your estimated tax payments without guessing—and thereby avoid the penalty—so ask your tax adviser to walk you through them.

There is some good news in this new law. The old code did not allow

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the IRS to waive the underpayment penalty, not even if a payment were late for valid reasons. Now, if you are late and have a valid excuse, the IRS may waive the penalty. This brings the estimated tax penalties under the same excuse provisions that apply to most other payments and penalties.

Fringe Benefits. Fringe benefits are an important part of a dealer's compensation package. The new law adds four main areas of nontaxable benefits, each with conditions to meet:

1) Services that the dealer provides to an employee at "no additional cost" are tax free to the employee, provided the services are also offered to customers. Testing a satellite receiver, for instance, would probably be nontaxable. Such services can't be restricted in favor of key employees or owners. If they are, the recipients could be taxed.

2) Goods and services offered to an employee at a discount are nontaxable, provided the amount doesn't exceed the gross profit on merchandise, or 20 percent on services. Thus, if gross profit on a system package is 25 percent, that is the amount that is nontaxable. A 50 percent discount would mean 25 percent would be considered part of the employee's income.

Discounts are also covered by a nondiscrimination clause. Problems may occur if employees are offered a 20 percent discount, while owners or key employees get 40 percent.

3) The use of a company car for business, subscriptions to business periodicals, safety benefits, and employee parking are considered nontaxable working condition benefits.

4) De minimis benefits are those benefits for which value is so small that it is unreasonable or impractical to keep detailed records. These could include employee parties, traditional holiday gifts, coffee and doughnuts, personal letters typed by the company office clerk, or use of the company copy machine. De minimis benefits are generally nontaxable.

Individual Retirement Accounts. Doubts about the long-term future of Social Security have made IRAs more popular than any congressman ever imagined. But since Congress can't seem to leave a good tax break alone, it has done some tinkering with this useful retirement program. Contributions must now be made by the date your tax return is due, without regard to any extension. Thus, for example, if your return is due April 15, your IRA contribution must be made by that date even if you get an extension to file at a later date. IRA trustees are also required now to report the year to which each contribution applies so the IRS can weigh returns against trustee reports, if it desires to do so.

Other Provisions

Used Property. There is a limit on the amount of used equipment on which you can claim an investment tax credit in any one year. Currently $125,000, the limit was to have increased to $150,000 this year, but the increase has now been postponed until 1988. The $25,000 jump might have meant an additional tax credit of $2,500 to the dealer who bought a lot of used equipment.

'Collecting more taxes than is absolutely necessary is legalized robbery.'

Capital Gains. The one-year holding period for capital gains has been reduced to six months. Remember, though, that shortening the holding period also reduced the period for claiming short-term losses, making timing very important on both ends of the six-month limit.

Luxury Cars. Congress has decided that a "luxury" car is any car with a price tag over $16,000. Congress has apparently not been shopping for new cars recently. If you own a prosperous company and drive a $50,000 Mercedes, for example, it will now take you nine years to write it off. Before the new tax law took effect, it would have taken you just three years.

Bonuses. A small corporation can't deduct an accrued bonus to the owner until it is paid.

Many Americans, frustrated by frequent tax changes passed by Congress, would agree with Calvin Coolidge: "Collecting more taxes than is absolutely necessary is legalized robbery." Judging from the impact the Tax Reform Act of 1984 is likely to have on the small-business community, the congressmen who passed it should have worn masks. □

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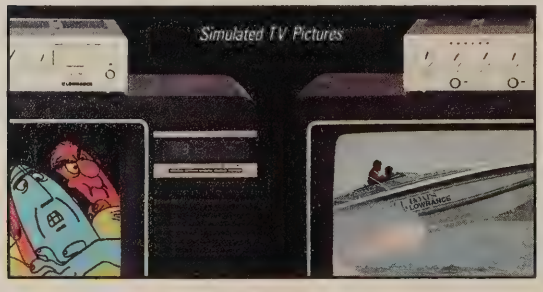

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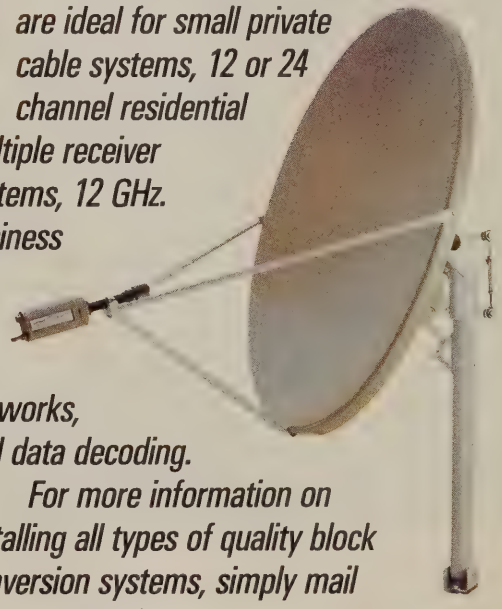

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Valenti Speaks Out

The president of the MPAA will approve of home satellite TV as soon as TVRO owners start paying for premium programing.

BY BOB SCHERMAN

AS PROFILED IN THE NOVEMBER issue, Jack Valenti and the Motion Picture Association of America wield a considerable amount of power in Washington. Shortly after the signing of the Cable Communications Policy Act, which included a section on satellite television viewing rights (see related story, page 76), Satellite DEALER *sat down with Valenti in his Washington office to discuss TVRO issues and his association's Washington activities in general.*

DEALER: How important is the home reception of satellite signals to you and your industry?

Valenti's objective is simply "to protect the ownership rights" of filmmakers.

Valenti: What is important to the industry is protection of material that is copyrighted and material that is intellectual property. To be able to protect that in this country and around the world from the intrusions of anyone or anything is our prime objective.

DEALER: And where does the satellite issue fit into that?

Valenti: It's part of that whole issue. There's the issue of satellites, there's the issue of cable, there's the issue of videocassette recorders—there's the issue of so many delivery systems. And right now, the American film and television programing industry is, I guess, the premier source of entertainment around the world. If we cannot protect that ownership, we're going to erode a very valuable trade asset to this country, as well as a singularly important asset in entertaining people around the world.

DEALER: At this point, would you compare the number of people using satellite dishes to instances of cable and MDS piracy?

Valenti: I think if there was just one TVRO out there it would be significant. If there was one cable system, with one customer, the principle has to be established, and I dare say if I could read your magazine and others, you envision exponential growth in private earth stations. I understand the number is 700,000 now, and it could go up to several million. So you're dealing with a substantial number of people who are receiving material that belongs to others and has been licensed to other markets, and not licensed to private earth stations.

DEALER: Do you think there are legitimate uses for private earth stations?

Valenti: As a matter of fact, this recent amendment to H.R. 4103 legitimizes the private earth station. But for everything you gain in legitimacy, you have to pay a price. And the price here is that for encrypted signals you have to subscribe and pay a reasonable fee, and there are civil and criminal penalties for those who abuse that privilege. There is also a mechanism set up for the establishment of payment for unencrypted signals. So the bill, I think, gives legitimacy to the private earth station and tears aside this veil of obscurity that enveloped it for so long.

DEALER: What else does the bill accomplish, in your view?

Valenti: The other thing it accomplishes is it makes clear for the first time that if you have a private earth station, you can't roam the skies with abandon. You have a responsibility for the privilege of picking up signals to pay for what you use. Isn't that the way we operate? If you want some soap, you go buy some soap. If you want a car, you go buy a car. So there's nothing unprecedented in all of this. It is saying to people, if you use intellectual property that is owned by others, then you have a responsibility to pay a fair price for it.

DEALER: At this point, do you expect that many program services will take advantage of the provisions in 4103 and establish a mechanism for payment of unscrambled signals?

Valenti: I hope so.

DEALER: But do you think they will? We have not found one, at this point, saying it is going to do so.

'For everything you gain in legitimacy, you have to pay a price.'

Valenti: Well, I can't answer that question. You'd have to talk to program services about that. If I were a program service, I certainly would.

DEALER: Of course, the TVRO industry argues that it's always been willing to enter into negotiations to pay for signals.

Valenti: That's right, and this is what this amendment is, taking them at their word. We've said fine, all right. Then we'll establish that mechanism in two ways: one for unencrypted and one for encrypted.

DEALER: There are some people who would say that such a mechanism might be used to prevent TVRO owners from watching signals.

Valenti: Why would you want to keep somebody from watching a signal if there now is a legitimate mechanism warranted by law that says payment can be expected? If the whole idea of copyrighted material is not being used, it's not very valuable. If it is being used, it is valuable, so long as you can get fair payment for the use of your product.

DEALER: Some people have suggested that certain programers, whose parent companies also own cable systems, would like to see the TVRO industry disappear or diminish.

Valenti: I don't know. I have not discussed this with HBO or Showtime offices. The answer is, though, that the TVRO device is not going to go away. It's there, so you deal with it. The amendment is dealing with reality. The TVRO is out there. Now, how do you fit it into the legitimate society which it inhabits? So now this amendment says, this is the way it is. It puts teeth in the federal law by increasing dramatically the civil or criminal penalties that are facing the people who use pay TV illegally, as well as those who assist them.

DEALER: But do you think it's feasible that programing services will want to deal with thousands, if not hundreds of thousands, of individuals across the country and receive a direct payment from them?

Valenti: I don't know. But I know that something will be worked out so long as it's reasonably fair. We have 30 million cable subscribers in this country, and copyright fees are being paid by them right now.

DEALER: You mentioned HBO and Showtime. If they and others go ahead and scramble their satellite signals, do you think they should make some effort to deal with the home TVRO market?

Valenti: Well, they have to. For a price, of course. That's their business. It's a service that is being sold to the public. The TVRO owner is part of that public. I don't see why, if I'm in the business of distributing material to the public, that I can't charge a fair price for my material.

DEALER: If HBO goes to a digital scrambling system, will it be too expensive for an individual to buy decoding equipment?

Valenti: Well, I can't answer that question because I don't know what the price will be. All I know is, if an individual uses that encrypted signal without getting authorization and paying compensation, he will face severe penalties.

DEALER: But certainly these issues have been around for a very long time. You must have some thoughts

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about them.

Valenti: You couldn't do anything about it until a bill was passed, until you saw what the law says. You have to adjust yourself to what the law says. We will address it now and take a look at it, and talk to whoever needs to be talked to on how it ought to be done, method of payment, equity, and all the things that go into the architecture of some new process of payment for copyrighted materials.

DEALER: Do you think the civil and criminal penalties established by the new law were more specifically aimed against the illegitimate commercial use of satellite signals?

'That dish has no value unless it can receive copyrighted material.'

Valenti: It's set against anybody who uses material that doesn't belong to them without getting permission and paying compensation to the copyright owner. It includes everybody.

DEALER: If an effort is made to scramble, and then "black boxes" start popping up, what will happen to individuals who use or sell them?

Valenti: They'll go to jail. You can go to jail. I don't think anybody wants to risk that for a few bucks each month.

DEALER: But how do you catch such people?

Valenti: I haven't given that much thought yet. All I know is what the law says. Essentially what it says is, we affirm that all MDS and STV signals are fully protected from unauthorized interception and reception. That's pretty all-embracing. It makes it clear that all satellite signals, whether encrypted or unencrypted, are also fully protected, with the sole limitation regarding the authorization of private home reception of unencrypted, satellite-delivered cable programing in return for compensation. It provides that program owners, as well as program services, may sue to stop unauthorized reception and viewing, and recover substantial damages for money lost. Lawsuits may be brought not only against the individual viewer, but in some circumstances against those who assist him in the interception or reception of such communications—that is, equipment sellers and manufacturers.

DEALER: Were you against the Gore and Goldwater bills in their original forms?

Valenti: Yes, we were. The Gore bill essentially gave rights to satellite dish manufacturers, but really didn't protect the copyright owner. Now remember, the satellite dish, the TVRO, is totally barren of any worth, has no value, unless you can receive copyrighted material. So all we said was, the dish manufacturer was going to make a profit off his dish, he's selling the dish to people. But that dish has no value unless it can receive copyrighted material. So it was put into the bill that people can receive copyrighted material by getting permission to use it and paying for it. That principle is so deeply embedded in the grain of this country, there ought not be any objection to the protection of intellectual property ownership.

DEALER: Why didn't the Gore bill protect copyright owners? There was a mechanism in it for the FCC to set such rules.

Valenti: I don't want the FCC. Why should I want a government agency to set these rules?

DEALER: That was only a last resort.

Valenti: I don't want any government agency to tell me how I set my rules. We've got that in the compulsory license for cable. It's an abhorrence to have government agencies tell you what you can charge and what you can't. Would you like a government agency to tell your magazine what you can charge for your advertising? Of course you wouldn't. And no businessman, no creative person, wants to have a government agency involve itself in the business of creating and distributing copyrighted material. The answer is, of course we don't want a government agency involved.

DEALER: Was that your major problem with the Gore bill?

Valenti: Well, I'm not going to get into all that. I think that what Congressman Gore and Senator Goldwater and others, to their eternal credit, and Chairman Dingell and Chairman Wirth, and Congressman Rinaldo, and what all of the other people involved in this have evolved is a very fair amendment which takes care of the ownership rights of all con-

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cerned. That's reasonable to me.

DEALER: To go back to the negotiations that took place, why did you believe this bill was acceptable enough that you changed your views? You did a 180-degree turn on this.

Valenti: No, you don't do 180s in politics. What you try to do is have objectives that you want to reach. Our objective was simple. We wanted to protect the ownership rights of creative people, whatever new delivery system suddenly enters the marketplace.

That was our objective and out of that objective—which collides with somebody else's objective—you negotiate, you compromise, you fit your objective into somebody else's, and out of that comes something that is politically compatible to all and comity [a friendly atmosphere] reigns.

DEALER: Some people have suggested that, in reality, you recognized that the TVRO is not going to disappear, and in effect decided to agree to something that you couldn't stop anyhow, and in return got increased penalties for cable, MDS, STV, and commercial users of TVROs. Is that a fair assessment?

Valenti: No, it's not. I don't want to stop any of these technologies. I want every new technology, whatever it is, to enter the marketplace and compete with every other technology. I only ask one thing, whatever technology it is, that the rights of creative programers, producers, and distributors must be protected. That is my full objective.

DEALER: Did you see this as a vehicle—and perhaps your best vehicle—for getting through new, increased penalties that go across the board for electronic technologies?

Valenti: I didn't say anything. I didn't introduce the legislation. The legislation was introduced by others. SPACE is the one that introduced the legislation.

DEALER: But surely it wouldn't have gone through without the MPAA's agreement.

Valenti: I'm just saying to you, though, I didn't initiate anything. I didn't ask for anything. When the legislation came up, we had to respond to it. And we did what I think is reasonable. The fact this legislation passed confirms that reasonableness. We have no problem with private earth stations, TVROs, none at all, so long as they abide within the body of law that protects the rights of program owners.

DEALER: Supporters of the satellite industry did not propose the new anti-piracy measures. They were certainly generated by the motion picture industry and its supporters.

Valenti: It's part of the give-and-take on this amendment.

DEALER: That's what we're asking. Is that what you got in return for your agreement on the bill?

Valenti: All we got was what we wanted in the first place: protection of ownership rights. And we have criminal and civil penalties in all areas. This isn't anything precedential at all. It's part of the whole fabric of the protection of creative programing. We try to do this around the world, not just in America.

'If he uses programs that belong to other people, he pays for it. I think the principle is clear.'

DEALER: Would you compare the individual on a farm somewhere who has no TV service other than a TVRO to some of the Caribbean nations that have been taking down signals carte blanche?

Valenti: No, I have no problem with the farmers who are doing that. But suppose there are 10 million people doing that. What happens? Ten million people using the material free of charge. What is there in cannon law or civil dogma that says what I have created and cost me a lot of money to produce, somebody else can use free of charge?

I don't compare farmers to anything. I'm merely saying that if that gentleman uses a tractor, he pays for it. If he goes to buy feed, he pays for it. If he uses programs that belong to other people, he pays for it. So I think the principle is clear. It sounds like a clarion.

DEALER: Could we get to the proverbial bottom line? You're saying that the amendment was a victory for the motion picture industry. The satellite industry is also claiming vic-

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tory. Who's right?
Valenti: I think it was a victory for fairness, for equity, and for the rights of private property owners. The people who make dishes are private. They own that dish and sell it to people. I want them to be protected, too. So it's a victory for the ownership principle that exists in this country.
DEALER: How does this provision protect people who make satellite equipment?
Valenti: It says that they can sell it, people can buy it. It says that if they advertise that you can get encrypted signals because we'll sell you a box to go with it, then you've got a problem. But it says they can sell their material and people can buy it, and then there's a mechanism set up for collection of fees for the use of material by individual owners.

'I know Rick Brown. I've met him ... and I think he's a very able fellow.'

DEALER: It also says that if a satellite dealer sells equipment with no intent to assist people in receiving signals for which they're not paying, then the dealer should not be held liable.
Valenti: Well, you do have to prove intent.
DEALER: SPACE is saying that they've accomplished getting through a piece of legislation in an unprecedented amount of time. Do you think it's fair for them to say that?
Valenti: Sure. I think they've done a good job, absolutely.
DEALER: What is your overall assessment of SPACE as a Washington trade association?
Valenti: I don't know enough about them. I think they're able people, smart, intelligent, energetic. But I personally don't deal with them. I know Rick Brown. I've met him, I've had two or three meetings with him and I think he's a very able fellow.
DEALER: Would you be willing to debate Rick Brown or Peter Dalton on just what fair and reasonable payment is?
Valenti: I don't want to debate anybody. We'll operate under the law. We'll do what is right. I don't want to debate anybody, I don't know what good that would do.
DEALER: You've said in a number of speeches that there will be a tremendous need for new program material in the future. Won't that increased need ensure that the motion picture industry prospers whether or not it's being paid directly by each individual out there? Isn't it a drop in the bucket compared to what you're facing in the future?
Valenti: Of course not. There's a need for it, but the words I'm about to offer you are the operative words. The trick is to make something that people want to see. It costs a lot of money to produce programs that people want to see. That's why you've got to sell it over and over and over and over again in many marketplaces before you can retrieve that $20 million dollars it cost you to make that movie or the $2 million an episode some hour-long dramatic show costs.

So if I'm a TVRO owner and I can tune in to 600 channels, it doesn't mean shit. It's the channels he wants to watch. The rest of them don't give you what you want. So that's the whole business. When I hear somebody say, 'but you've already been paid'—paid for what?
DEALER: Is it in the public interest that the motion picture industry make a certain amount of money?
Valenti: Yes, I think it's in the public interest. It's earth station manufacturers, it's in their interest to sell it cheap. It's in the interest of cable people to do it. Why only single out motion pictures? Because it's a very risky business. Far riskier than being a manufacturer of TVROs, for God's sake. When you sell that TVRO, you've made a profit. When we put a movie out, we don't make a profit; maybe not ever.
DEALER: But some people believe the studios are constantly asking Congress to pass laws that will help them increase their profits.
Valenti: I could say the same thing about the SPACE people. They seem to have a thing that Congress has got to say that they've got a right to make a big profit. We don't say anything at all. All we're asking is that what we own be protected. Is that alien to the Ameri-

can way of life? I'm not asking for any more for me than I want for anybody else. Not at all. I'm sorry if I've given some people that impression, but it's not anything that I've said.

DEALER: Why do you think there's so much discussion about what you and the MPAA are doing? It is a relatively small industry you represent.

Valenti: Very small. I can't answer you. Maybe it's because we're really not a trade association, but a worldwide organization. And if you're in the movie business, you naturally attract more dazzle and glamour than somebody selling asparagus. And maybe that's it. I don't know. The answer is, I do my job. I work hard. I consider myself a professional. I think I know what I'm talking about when I start talking. That's what they pay me for, and that's what I do.

DEALER: Even your supporters and admirers say Jack Valenti could be even more effective at what he does if he were a little more understated at times.

Valenti: Look, I'm myself. I'm me. I have a style about speaking or writing or whatever, and that's the way I am. I'm being honest. I can't change me. If there are things that I do that seem to irritate people, I don't do them deliberately. I can't really say that I really dislike a single person in this town. I don't have any enemies because I don't deal in enemies. I deal in antagonists. I may be antagonistic toward a view, but I don't deal in personalities.

'I don't have any enemies because I don't deal in enemies. I deal in antagonists.'

But if I seem to be overstating things, I don't do it deliberately. It's the way I feel, the way I present myself. I'm passionate about what I believe in, and sometimes my passion may leap beyond normal boundaries.

DEALER: A lot of people say that you and MPAA have an incredible amount of power in Washington.

Valenti: I don't think that's true at all. I think if your cause is just, if you've got reason and merit and facts and persuasion on your side, you've got clout. If your cause is unjust, if you can't corroborate it, if you can't confirm it, if you can't certify it, you don't have any clout.

I don't believe in clout. I can't force a congressman or senator to do anything that he doesn't really believe is in the long-term interests of the people that he's by solemn oath sworn to serve.

DEALER: Then why do you think so many lobbyists are envious that the MPAA is the only association in the world that can call upon stars like Charlton Heston to come in and testify in its behalf?

Valenti: But if Charlton Heston didn't say something worthy and meaningful, they'd laugh at him. So

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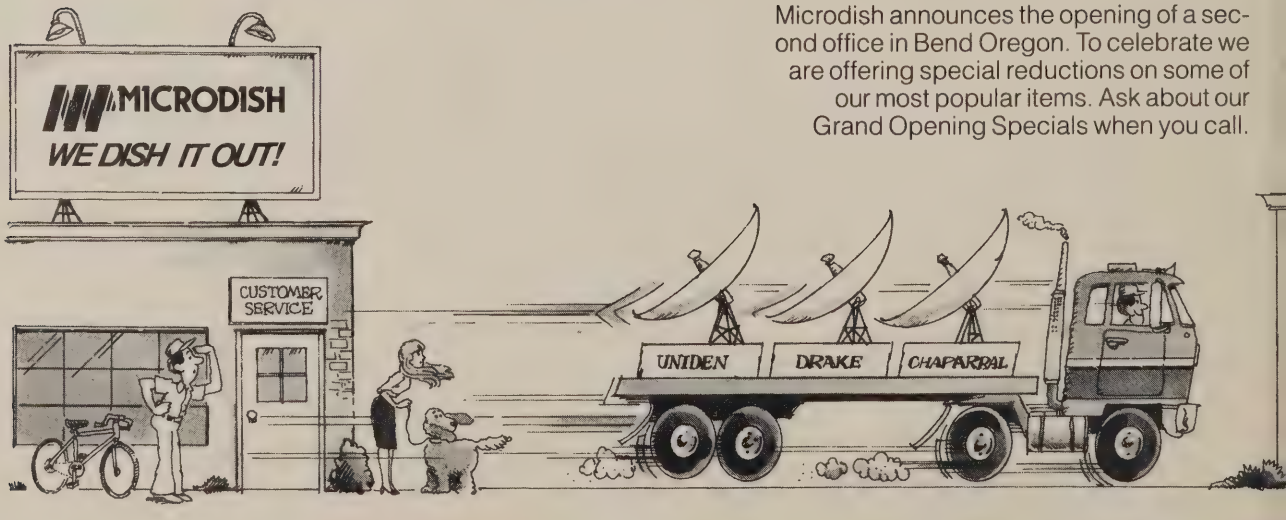

the fact that you bring in some movie star is nothing. The movie star might draw a crowd, and everybody gets his or her autograph—and then they go back to their offices and vote the other way.

DEALER: So what would you say to the associations in town that have said they wish they had Jack Valenti's screening room and the aura of Hollywood in their lobbying arsenal?

Valenti: You know what I wish? I wish I had 1,000 constituents in every congressional district. I wish I represented 5,400 cable systems. I wish I represented 17,000 banks. I wish I represented 64,000 realtors. That's clout. We don't have any constituents. I would trade in that screening room tomorrow for some grass-roots constituency. Any day.

DEALER: Do you use political contributions as a way of overcoming your lack of grass roots?

Valenti: No. I can tell you that our PAC [political action committee] is probably the smallest PAC in Washington.

DEALER: What about having Hollywood people appear at political fund raisers?

Valenti: How many Hollywood people appear at political fund raisers? I don't know.

DEALER: It's widely acknowledged by political people that if a candidate has opposed the MPAA in Washington, he should not expect Hollywood stars to appear at a fund raiser.

Valenti: I can only tell you that's a blatant lie. In 1984 I was instrumental in getting one star to go to one fund raiser. Period. Now, I tried to get a lot of stars to go to fund raisers for people who asked me. I bet you I must have called 150 of them, several of them many times. I got one. That's the sum total of my effectiveness in getting stars to go to fund raisers. So that's ridiculous.

DEALER: But if you knew that a certain star had appeared at a fund raiser for a member of Congress who has sponsored legislation that you were vehemently against, wouldn't it be likely that you would call that star and say something?

Valenti: Absolutely not. You know why? Because I don't know when that congressman could be on my side. I learned one thing from President Johnson. There's no such thing as enemies and allies. There are people that you deal with every year. That congressman who might oppose me on issue A might be for me on issue B. And they have memories. I have a long memory. I know when somebody does me in. I remember it. So that's the last thing in the world I'd do. □

'I have a long memory. I know when somebody does me in. I remember it.'

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Scrambling for Decoders

The quest for satellite signal security heats up as several manufacturers compete for the encryption market.

BY JOHN D. FANNETTI

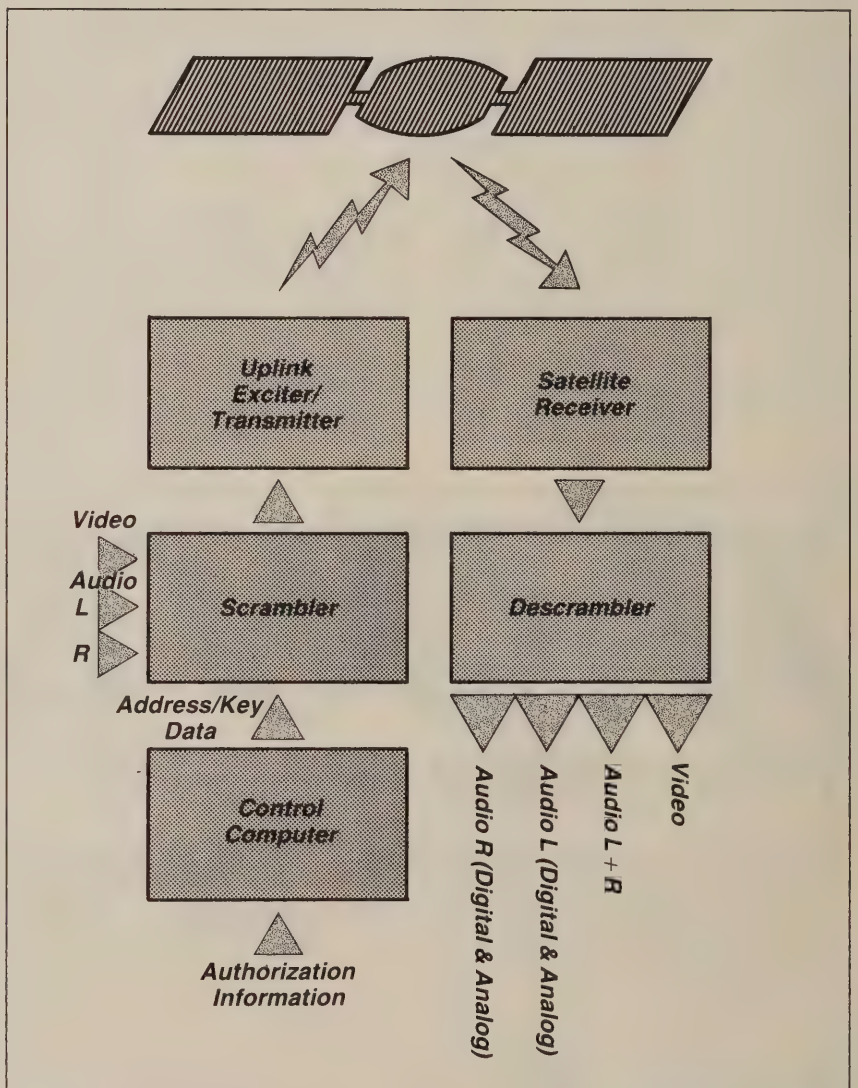
Q *CAN YOU GIVE US MORE INFORmation on what to expect in terms of satellite scrambling systems: how do they work? What are the technical ramifications? Where does "encryption" fit into the picture?*

A. Continuing our November discussion of satellite signal security, we'll look at three of the major systems currently on the market, all of which use encryption techniques in varying degrees: the VideoCipher II from M/A-Com, the Oak Orion, and TRW's Secure Digital TV system. It should be noted that the following is not intended as a product evaluation, but rather as an informative technical discussion of the individual systems.

Let's begin with the VideoCipher II—the system Home Box Office reportedly will use when it finally scrambles its Galaxy 1 signal. M/A-Com's scrambling system uses a sync suppression, time-related mixing technique controlled by data-encrypted algorithms to scramble the satellite video signal. The audio portion of the transmitted satellite signal is digitized and the information encrypted through a reversible transformation (the changing of one expression into another in accordance with a mathematical rule) that is determined by a digital word called "the key." (For background information on satellite signal encryption, see "The Scrambling Gamble," page 185, November issue.)

When a system uses a sync suppression, time-related video scrambling technique, the system's security is determined by the random amplitude changes in the video signal's horizontal sync-pulse, which can range from 6 dB to 9 dB suppression. Hence, the amplitude—or, more accurately, the suppression—of the sync-pulse is varied with time, so that a decoder operating at some time period (T) will not properly decode the time-varied, suppressed horizontal sync-pulse coming into the receiver operating at another time period (T ± 1). The decoder must also receive the proper data-encrypted algorithms to enable it to track the changing modes of the sync-pulse amplitudes.

In order to interface with the VideoCipher II decoder, it is essential that the video output of the satellite receiver's demodulator be unfiltered and unclamped. What does this mean



Will M/A-Com's VideoCipher system be compatible with home TVRO equipment?

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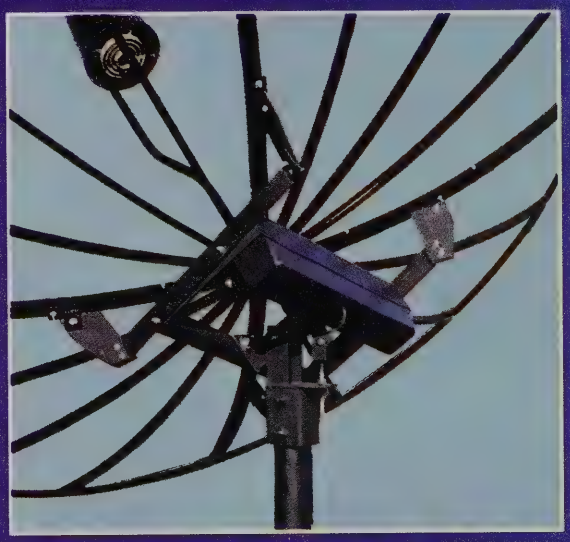

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to the satellite dealer? Consider the following:

• The video output produced by 90 percent of the home TVRO receivers now on the market is both filtered and clamped. The video is filtered about 3.58 MHz to prevent the high-frequency audio subcarrier from entering the video output, and the receiver's output video is clamped to remove the energy dispersal waveform that was added to the transmitted video signal.

• All video signals transmitted to a satellite and translated back to Earth must have an energy dispersal waveform. This waveform ensures that the radiated power from the satellite at any given frequency is less than a certain maximum allowable level, both to minimize the probability of interference with terrestrial microwave systems and adjacent satellites, and to reduce intermodulation in half-transponder video transmissions. Once the video signal is demodulated, the triangular waveform must be removed, which is usually accomplished by clamping the video signal to the horizontal sync-pulse tips.

These are but two of the many technical characteristics the home TVRO receiver must have to successfully interface with the VideoCipher II decoder (still to be addressed are such areas as signal gain, signal level, differential gain, and differential phase, to name a few). Considering these two features alone, however, the great majority of home TVRO receivers immediately "fail the grade" when tested for compatibility with the VideoCipher II.

Oak's Entry

The Orion scrambling system uses hard audio encryption combined with medium video encryption to meet the optimum cost vs. performance for TVRO systems. According to the manufacturer of the system, Oak Satellite Corporation, the Orion encoders and decoders interface with TVRO receivers at normal audio and video levels.

The Orion system was designed for direct-to-home reception of encrypted television. The Orion-I is a universal decoder that is capable of decoding any scrambled transponder selected by the satellite receiver. Some of the primary features of the Orion system are:

• Like the Orion-I decoder, the Orion-C encoder is fully addressable through the transmitting station's computer control system.

• Each decoder can receive up to 49 different categories of programing material.

• The Orion system is compatible with VBI information systems, such as Telidon and captioning for the hearing impaired.

• It is fully compatible with all conventional satellite receivers with clamp-disable capability.

• Ease of installation and aesthetic consideration are advertised features of the decoder.

The Orion system does not encrypt both audio and video information. While the audio is digitized, advanced baseband scrambling techniques are applied to the video, since this can be accomplished without over-expanding the satellite signal's bandwidth.

The digital system provides more consistent reproduction and greater signal transmission reliability.

The horizontal and vertical sync-pulse information is removed by the Orion decoder from the satellite signal. This information must be regenerated with precise timing in order to unscramble the transmitted video signal. The importance of precise timing is also seen in the restoration of the horizontal and vertical sync-pulse information that is achieved by placing the required data (information) on a line in the vertical interior of the encoder at the transmitter site.

Once the audio has been digitized, it is encrypted. The Orion system then puts the digitized and encrypted audio in the baseband video at the "usual" location of the horizontal sync-pulse (its location prior to removal by the encoder).

Installation of the Orion-I decoder is relatively simple, requiring little time and no special skills or tools. High-quality video and audio outputs are provided for display on a television monitor, and a modulated VHF output is available for direct connection to a standard television receiver. Located at the bottom of the unit is a switch that is used to select a modulated VHF output on either channel 3 or 4. The satellite receiver baseband video output is connected to the decoder video input connector, and for unscrambled signal reception, the receiver's audio output is connected to the decoder bypass audio input.

TRW, Too

The third system we'll discuss is TRW's technically advanced signal security system that uses encrypted control for both audio and video. According to the system designers, the digitized scrambling techniques employed by the TRW system are substantially superior to the hybrid analog/digital scrambling techniques used in other security systems. To illustrate:

• The analog system is prone to drift problems, while the digital system is not. Hence, the digital system provides more consistent reproduction and greater signal transmission reliability.

• Compared to the analog video scrambling system, the digital video scrambling system reproduces images of superior quality (higher resolution).

• A greater degree of security may be achieved by digitizing and encrypting both audio and video than is possible with a system using analog video scrambling techniques.

Before the audio and video satellite information can be encrypted, the TRW system requires it to be digitized. Once digitized, encryption is accomplished using a reversible transformation determined by a digital key. The reversible transformation is simply the process of changing one expression to another in accordance with a mathematical rule, while the key functions as its name implies: it opens or closes the encryption door. The ensuing encrypted message is run through the digital-to-analog (D/A) converter, and the analog signal is transmitted. At the receive end of the satellite transmission, the signal is processed through an analog-to-digital (A/D) converter and then encrypted, using the same key.

In a security system employing

encryption techniques, the key may easily be changed to ensure security. The digital word may vary enormously, making the number of possible system keys and their frequency of change virtually limitless. Since the system's security requires that the key remain a secret, it, too, is encrypted during transmission.

Any discussion of satellite signal security ultimately provides more questions than answers for this industry. If the technology of scrambling were not so new and untried, it is likely that cable-TV programing would already be scrambled. The issue of whether premium programers such as HBO will make descramblers available to private TVRO owners has not yet been resolved, but it is generally recognized that the intent of Congress in passing satellite viewing rights legislation was to ensure that a reasonable marketing scheme will be devised such that all Americans—and especially those not served by cable—will have access to satellite-delivered information and entertainment. While the viewing rights legislation signed into law by President Reagan last October allows programers to establish a marketing scheme for private, noncommercial use of *unscrambled* programing by individuals, few programers, if any, are expected to do so. □

The issue of whether premium programers will make descramblers available to TVRO owners has not yet been resolved.

Submit technical questions to: Questions and Answers, Satellite DEALER, *Box 2700, Dept. D, Hailey, ID 83333. Answers are provided by John Fannetti, president of JDF Communications, a CATV and TVRO consulting firm in Syracuse, New York. Fannetti has more than 30 years of engineering and earth station troubleshooting experience.*

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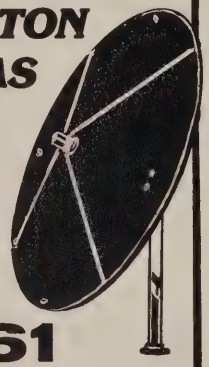

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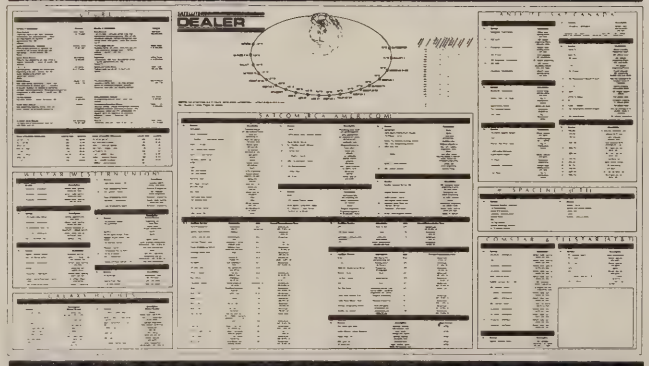

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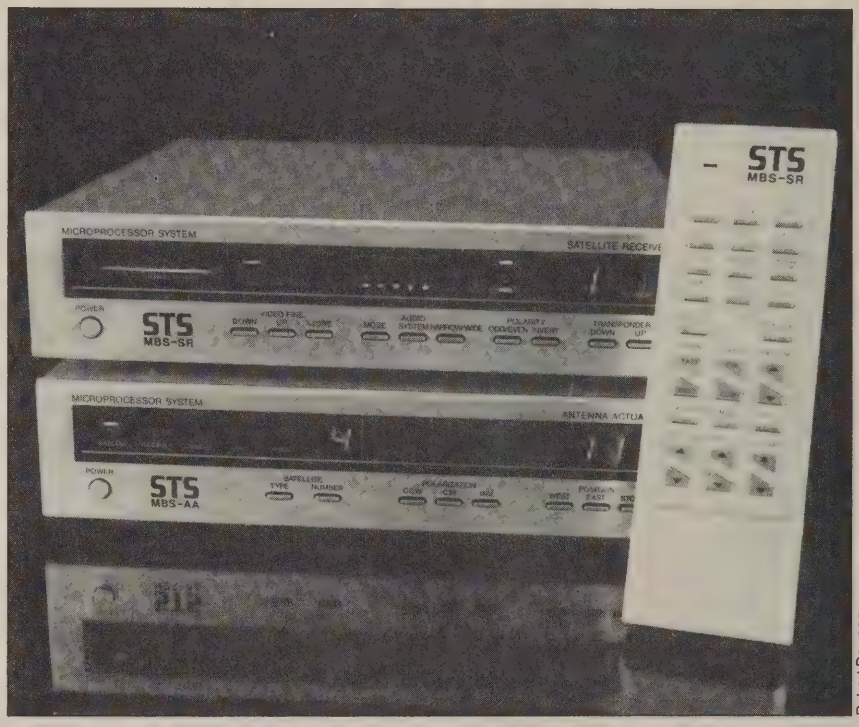
The STS Receiver and Dish Positioner

The MBS-SR and MBS-AA combine to form a slick, remote-controlled electronics package, complete with stereo.

BASED IN MARYLAND HEIGHTS, MISsouri, Satellite Technology Services Inc. hails from the heart of the Show-me State. STS's industry ads show the company's latest satellite TV products and proclaim, "After this, ordinary reception will never look the same." So, with half the staff here being regular attendees of Skeptics Anonymous, we put the challenge to STS: *show us.*

The MBS-SR satellite receiver is microprocessor-based and has the capability to store video tuning, polarity, and audio tuning information. The package comes standard with infrared remote control, making most functions accessible from the comfort of your customer's armchair. Coupling this unit with the MBS-AA actuator yields a slick, remote-controlled electronics package, complete with stereo. We evaluated the system on a 10-foot Winegard dish, with a Chaparral Polarotor I feed and a 100-degree Dexcel LNA. Required cable included the standard RG-213 jumper between LNA and downconverter, and two runs of RG-59 to the dish: one for 70-MHz IF and tuning, and one to power the downconverter and LNA. We also ran a length of five-conductor, 18-gauge cable for the Polarotor and actuator sensor, and a 14-gauge, two-conductor cable for actuator motor positive and negative.

With the provided mounting hardware and an easily accessible barrier strip inside the actuator, installation was a breeze. The 18-inch actuator operates on 36 volts DC, and the position sensor is a Reed switch device. For every rotation of the actuator motor, four pulses are sent to the actuator controller; at six revolutions per inch, the resolution is roughly .0416 of an inch. While the 18-inch actuator performed well when paired with our lightweight Winegard, we believe an arm with a greater throw would be necessary to move larger dishes with accuracy. The actuator arm we tested was manufactured by Warner, but we're told STS also uses JGS jacks on some units.



Robert Dawson

Bell and whistle lovers will appreciate the 24-channel programable memory.

The MBS-SR receiver and MBS-AA actuator are well designed, highly complementary components. They are connected with a 12-inch cable terminated with DIN plugs. Ease of installation makes them a good choice for system upgrades, and their front-panel features and LED displays will make them attractive additions to most living rooms.

The receiver does indeed have some nice features. A terminal labeled "test" on the receiver's rear panel, for example, allows attachment of a digital volt meter, which in turn allows the installer to squeeze every available dB out of the system (the lowest voltage, of course, indicates the strongest signal). The receiver is equipped with an analog signal strength meter, which is easier to read during installation than an LED bar graph.

The audio bandwidth button allows the user to achieve peak audio reception, and the audio mode button allows selection between mono, multiplex, matrix, or discrete stereo formats.

For bell and whistle lovers, the 24-channel memory is the cherry on top of the STS sundae. Consumers will undoubtedly appreciate having preprogramed video, audio, satellite position, and skew adjustments. The downside here is that the dealer is the one who does the preprograming, which costs an extra half-hour (at

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5 volts terminal
Ground terminal
Test terminal
In-line fuse
Three-wire line cord

Actuator Front Panel
Power on/off
Satellite name select
Satellite number select
Polarity CW/CCW
Polarity invert
East/west positioners
Store
LED satellite indicators
LED function, active, and polarity invert
Digital position readout

Rear Panel
Mollex connector
Pulse terminal
Ground terminal
5 volts terminal
Data input
In-line fuse
Three-wire line cord

Remote control
Audio fine tuning (one control for each channel)
Volume up/down
Audio bandwidth
Audio mode
Mute
Antenna east/west
Polarotor CCW/CW
Video fine tuning up/down
Polarity odd/even
Satellite select buttons
Transponder select buttons

most) at installation time.

The infrared remote, which can be used to override the preprogramed positions, is a slim, 29-function pulse position code control with transmit indicator. It operates on two AA batteries and has good range and beamwidth. Attractively styled in high-impact plastic and colored to match the receiver and actuator components, the remote enhances STS's good-taste design. The control panel might at first glance seem overly complicated, but with basic instruction from the dealer and a little practice, the consumer's "technoshock" should be minimal.

STS offers two methods of programing, by remote control or by front-panel controls. (For stand-alone receiver and antenna actuator purposes, however, STS was forced to put a separate "store" button on each unit and omit the function from the remote control; therefore, when programing by remote control, the store button on the MBS-SR or MBS-AA must be depressed to retain information in the memory.) Setting the upper and lower actuator limit, for example, is as simple as selecting function number 1 and pressing the store button. Satellites are located by depressing the east or west buttons.

Each transponder may then be tuned in with the video fine-tune button; the store button on the receiver front panel should be pressed after the best picture quality is obtained. Polarity adjustments are made on the antenna actuator unit with buttons labeled CW and CCW (clockwise and counterclockwise, respectively), which are independent of each other and allow very precise polarity and skew adjustments. The installer locates a satellite, identifies it, and then programs the satellite type and number, as well as antenna position and polarity information, by hitting the store button.

Although the receiver's strong AFC ultimately compensates for drift, the single-conversion downconverter seems to need about half an hour of warm-up time to become stable enough to program the receiver. Because the MBS-SR receiver cuts power to the downconverter and LNA when it is switched off, causing a cool-down of these components, STS recommends that the receiver be left on at all times to allow the system to live up to specifications.

Audio tuning is performed solely by remote control. The audio default setting is 6.8 MHz mono. The strong AFC sometimes hampers the search for subcarriers, and with no indication of what frequency is being tuned, you have to use the default of 6.8 as a starting point and go up or down from there. All modes of operation produce quality audio. Although tuning matrix audio is somewhat troublesome, success will be rewarded with high-quality stereo sound.

The system also features audio volume control and a mute function. One problem with this, however, is that volume control and muting are only accessible on the stereo outputs of the receiver, not the RF out. Also, on/off control is not possible with the STS remote, and customers planning to watch satellite TV in bed might object to having to get up to turn their television on or off.

The only other drawback we found with the STS system is the necessity of running a second piece of RG 59 to provide power to the downconverter and LNA, thus adding an extra expense to the overall installation procedure.

The receiver is manufactured in Japan, but its Missouri roots clearly show through: we received crisp, clean audio and video on all satellites tuned to. Picture quality when using the RF output was comparable to the video, although we did notice some slight color shift and loss of definition. □

This product was reviewed by Jerry Poyser. Poyser is product evaluation manager for Comm-Tek Publishing Company.

PRODUCT: MBS-SR Receiver and MBS-AA Positioner
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Maryland Heights, Missouri 63043
(314)423-5560

CONTACT: Mike Manning
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NEWS

A lawsuit against Chaparral Communications was served to Taylor Howard, director of research for Chaparral, at the November STTI show in Dallas. The suit, filed by feedhorn competitor Boman Industries, charges unfair trade practices against Chaparral, Howard, and Bob Taggart, president of the company. Chaparral had previously filed suit against Boman for patent infringement. At the show, Boman's Bob Maniaci denied knowledge of the suit. "I would never plan to have someone served at a show," Maniaci said. Howard called the litigation a "nuisance suit."

United Satellite Communications Inc. and Comsat went separate ways after Comsat decided to terminate negotiations with Prudential to buy into the foundering DBS system. Comsat representative Kim Baumgarten said the decision was based on the company's belief that the investment required was too large and too risky. Baumgarten said Comsat still believes in DBS and will consider other DBS endeavors. USCI Public Affairs Director Edina Gilmor said USCI officials are disappointed, but are looking into other alternatives. USCI reportedly has a capital shortage.

In a separate move, Comsat announced a partnership with Holiday Inns to form a Ku-band video conferencing network.

The SPACE board of directors elected new officers and a new executive committee during a marathon meeting at STTI's Pan-American show in Dallas. The new officers are Taylor Howard of Chaparral, chairman; Charles (Bud) Ross of Birdview, president; David Johnson of Paradigm, treasurer; and Ted Anderson of Automation Techniques, secretary. Dealer board member King Oberlin of King's Antenna Service was elected to the executive committee, as was Stan Leaf of S.R.C. Industries. Robert Behar of Hero and Ronald Wysong of Drake tied for the final spot on the committee. Behar won the position by the flip of a coin.

The SPACE dealer board elected Charlie Brown of Knoxville, Illinois, chairman; King Oberlin of Angola, Indiana, vice chairman; Jeff Manion of Wichita, Kansas, secretary; and Tom Harrington of Columbus, Ohio, treasurer.

The board also defined the term "dealer" for the purpose of qualifying for a board position. A dealer's primary business must be satellite earth station end-user sales on behalf of himself, a partnership, corporation, individual, or other similar business entity, and not primarily manufacturing or distributing.

How did the newly expanded SPACE board perform with 46 directors? Like molasses in January. The Dallas meeting, which began about 3:30 p.m. Saturday, November 17, broke up the next morning at about 1:30. "I guess we just got so large that we'll have to do things this way," said L. Russell Keene of Spacecrafts after joking that meetings should be limited to nine hours. Sandy Wirth of Delta Satellite said, "I'm going to need a haircut if this meeting lasts much longer."

Taylor Howard, however, has a reputation for running terse yet informal meetings, and things should also improve when the players stop jockeying for position and attendance for the meetings falls to a workable level. Howard admitted he purchased a copy of *Roberts' Rules of Order* for the job. Parliamentary procedure at SPACE meetings is likely to become more of a necessity than a courtesy.

The dealer contingent, though outnumbered, seems to be the most cohesive group on the board.

Women in Satellite Communications elected its first board of directors at the Dallas trade show. The board will present the WSC membership with proposals for WSC structure, dues, committees, and goals. The group has already expressed an interest in education, consumer awareness, and political activism.

The board members are Connie Willett-Everett of Satellite Reception Systems; Kathy Lewis of Lewis Electronics; Shirley Ware of NASEM; Barbara Clendenin of Solar Satellite Inc.; Nancy Turpin-Sherwood of Odom Antennas; Robyn Nietert of Brown & Finn; and Lynda Carter of *Satellite TV Magazine/ON SAT*. Alternates are: Judy Frayser of Automation Techniques and Elizabeth Cowart of Star Systems.

For more information on WSC, contact: Connie Willett-Everett, Satellite Reception Systems, 145 N. Columbus Road, Athens, Ohio 45701, (614)592-4812 or (800)592-1956.

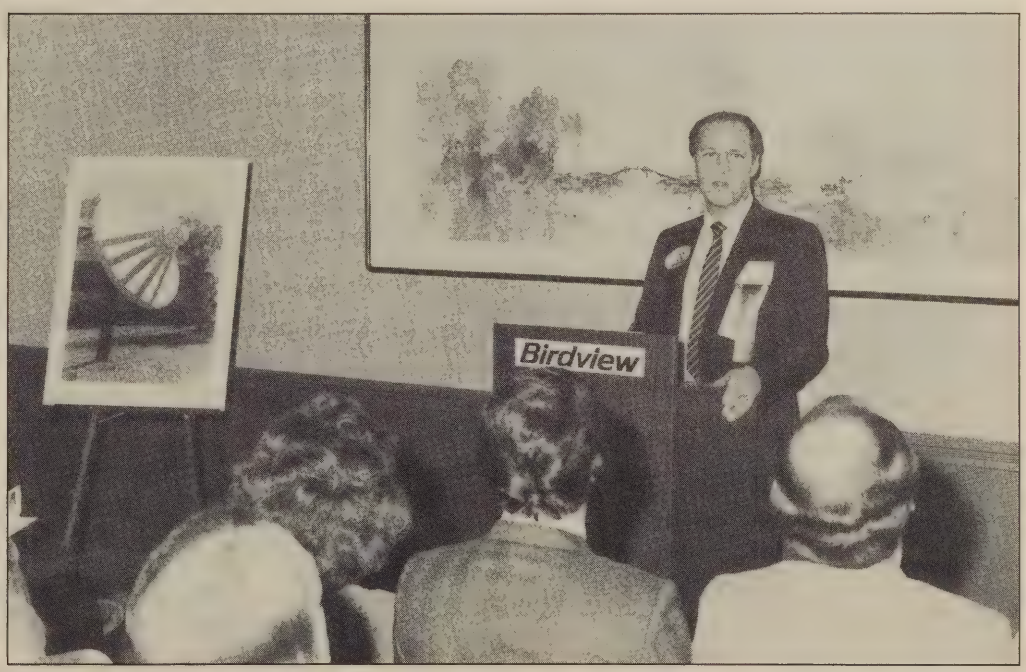
Cable Music Channel, after barely one month on the air, was sold by Turner Broadcasting to MTV Network for $1 million. Turner spokesman Michael Oglesby said the programing service was sold because operating expenses were too high and were not expected to come down in the near future. As part of the deal, he said, MTV agreed to purchase $500,000 of advertising from TBN. Oglesby would not say whether TBN lost money on the deal. He said he did not know what MTV would do with the channel, but speculated it would be taken off the air and its subscribers added to MTV's subscriber base.

Showtime/The Movie Channel has signed an agreement with M/A-Com to purchase Videocipher equipment for scrambling. The system is the same HBO plans to use. "We intend to fully test and debug the system, and to start full scrambling by the third quarter of 1985," said Stephen Schultc, Showtime/The Movie Channel's senior vice president, operations and productions services.

HBO expects to test its scrambling system early this year on the vertical blanking interval so that video will be uninterrupted. The premium programer says it will have its scrambling system fully operational this spring. The service has set up a scrambling hot-line number, (212)512-5666, for cable affiliates.

Birdview Satellite Communications reported record sales of $7,808,000 for the quarter that ended June 30. This compares with sales of $4,911,000 for the same quarter in 1983, a 59 percent increase.

At least three large TVRO equipment manufacturers have begun national consumer advertising campaigns. Until now, most manufacturer advertising has been done in the trade press and has been aimed at distributors and



Birdview President Bud Ross announces record sales figures and new products at the STTI show in Dallas.

dealers. The companies, R.L. Drake, National Satellite Communications, and Winegard, are advertising in such magazines as *Time, TV Guide, Sports Illustrated, People,* and *Playboy.*

Tulsa, Oklahoma, beat out Orlando, Florida, as the site of a TVRO trade show scheduled for June. Tulsa was chosen by SPACE because of Oklahoma's good footprint, high dealer concentration, and central location for exhibitors. The show will be hosted jointly by SPACE and STTI, according to an agreement between the two that calls for combined shows for the next five years. Agreements between SPACE and STTI, however, have a history of falling through.

Senator Barry Goldwater, R-Arizona, plans to introduce a nonbinding resolution to Congress urging the FCC to instruct state and local officials to remove zoning restrictions and high special-use and building-permit fees that discourage sales of satellite TV systems in many areas. Hearings and legislation will follow if the FCC does not act on the resolution. Goldwater's plans were revealed in a speech by Goldwater aide Terry Emerson at the STTI Pan-Am trade show in Dallas.

Goldwater has also written a letter to Bruce Christensen, president of the Public Broadcasting Service, to protest Christensen's stand that it is illegal to receive PBS broadcasts with a satellite dish. Christensen said his remarks were made prior to the passage of S. 66. PBS attorney Lawrence Horn said PBS has not studied the new law yet but will do so soon. Goldwater maintains that public tax support for PBS gives the public a right to receive the signals and gives PBS an obligation to provide its programing to the public at large.

After President Reagan signed the Cable Communications Policy Act (S. 66) the *Los Angeles Times* began accepting advertising from satellite dealers. The paper had previously prohibited such advertising on the grounds that satellite antennas were illegal. Fred Finn of the Washington, D.C., law firm Brown & Finn, legal counsel to SPACE, says two newspapers in Hawaii and a radio station in New York City have reversed similar advertising bans. Finn says he does not know of any media still refusing advertising from TVRO dealers or distributors.

Channel Master's new manufacturing plant in Smithfield, North Carolina, is 700,000 square feet.

Channel Master has consolidated its domestic manufacturing and marketing operations in a 700,000-square-foot plant in Smithfield, North Carolina. The new address is: Channel Master, Box 1416, Smithfield, NC 27577, (919)934-9711.

The Young Astronaut Program, recently launched by President Reagan, will bring the world of outer space to elementary and junior high school students across the nation. Invitations to join the program have been sent to 110,000 schools. Intersat, one of the program's sponsors, will help the schools raise money to purchase earth stations needed to receive programing from NASA's contract channel (Galaxy 2, tr. 15; Satcom F5, tr. 13; and Satcom F1R, tr. 9). Satellite dealers are urged to contact local schools with offers to help set up chapters of the program.

Reagan inaugurated the program with a ceremony at the White House, saying, "You'll find incentives to pursue science and math, and the chance to take part in exciting space-related activities."

Home Box Office has laid off approximately 150 employees, including several at the vice president and director levels. Among those laid off were David Meister and Michael Lambert, two senior vice presidents of HBO enterprises and new services.

Star-Com, a Big Spring, Texas-based distributor, has purchased Wespercom. Chuck McDonald has been named manager, and Cliff Fleury is the customer service coordinator in Bend, Oregon, the only Wespercom outlet still in operation. McDonald says there are no plans to drop the Wespercom name.

Warren Supply Company has introduced a floor planning program with one-month free financing for home satellite dealers. The program has been arranged through the Whirlpool Acceptance Corporation, which also serves Warren's network of Whirlpool appliance dealers. For more information, contact: Warren Supply Company, 300 E. 50th North, Sioux Falls, SD 57104, (800)843-9924.

Startrak Satellite Systems of Kulpsville, Pennsylvania, has been awarded a contract from Warner Amex Cable Communications to install a private TVRO system for Drew Lewis, Warner Amex CEO and senior adviser to President Reagan. The system will be located at Lewis's estate in Schwenksville, Pennsylvania, and will serve five homes on the property, each of which will utilize separate receivers for independent transponder selection.

The Orion Personal Decoder, manufactured by Oak Communications, has been selected by Hospital Satellite Network of Los Angeles to secure a satellite-delivered medical training feed now being beamed to hospitals nationwide.

Delstar Systems has opened a new office and warehouse distribution facility in San Antonio, Texas. The new outlet will stock the same line of satellite TV products as its Houston branch. Lance Billman, formerly with Houston Tracker, will be in charge of sales. Martin Flores will handle shipping and receiving. For more information, contact: Billman at (512)650-9575, or Mark Kraemer at (713)776-0542.

MISAT has opened a regional warehouse in British Columbia. The warehouse is located at 20701 Langley Bypass, Langley, BC. MISAT has added several new products to its line, including Sat Pak cable products, the Northwest Satlab Cosmos II receiver, and Peaker Tweaker.

Kaul-Tronics has opened its third regional office and warehouse. The new address is: Kaul-Tronics Southeast, Suite One, 1700 Cumberland Point Drive, Marietta, GA 30367, (404)955-6682.

PEOPLE

Peter Dalton, president of KLM, did not want to serve on the SPACE board of directors in 1985. Although he turned down nomination during the general election, the SPACE board, in an unusual

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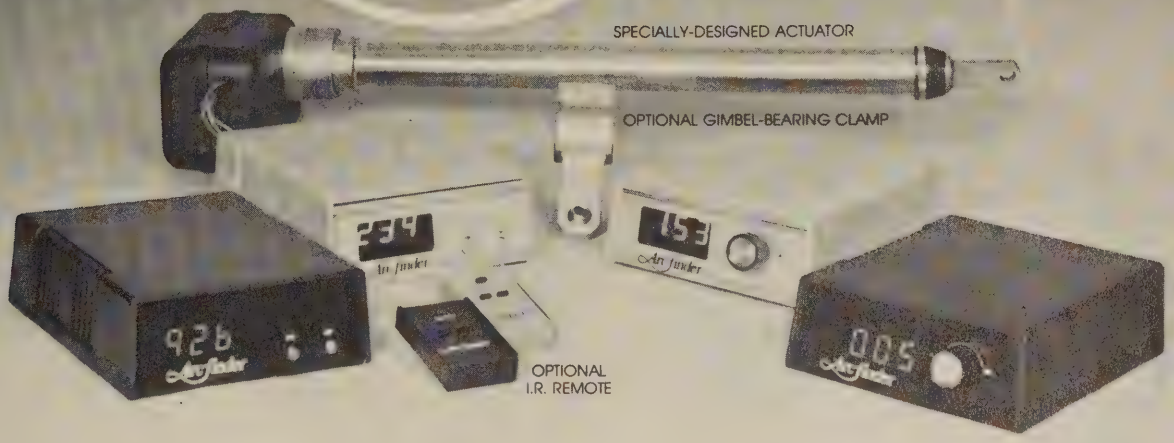

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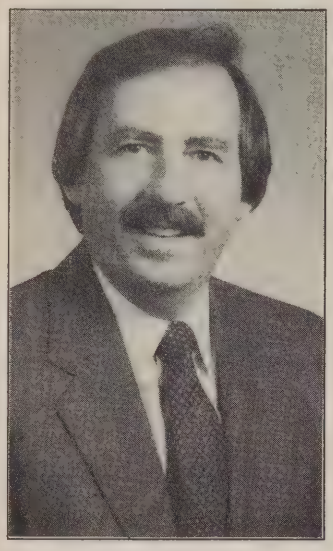
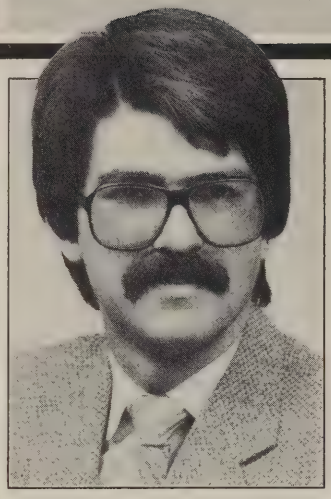
DISTRIBUTORS: **Alabama** - Double K Wholesale Supply 205-681-5200; **Arizona** - B.O.A. 602-368-2896; **Arkansas** - Fireball Electronics 501-862-1630; Greenwood Fab. 501-996-2169; P.C.M. 501-753-5715 **California** - Panarex 818-341-9512; Swan TVRO 209-948-5254 **Florida** - North American Satellite 615-892-3901 **Illinois** -Advance Electronic 312-967-8666 **Indiana** - C.W.Y. Electronics 317-448-1611; Samco 812-279-6110 **Iowa** - Nevada Dist. 515-382-6516 **Kansas** - Atek 913-582-5819 **Kentucky** - Kentucky Satellite 606-348-4541; Herron Assoc. 502-465-5631; Southern Scientific 502-472-3704 **Louisiana** - Interstate Supply 504-446-0777; LACO Sales 504-293-7423; PCM of LA 504-463-9027 **Maryland** - Multi-Sat Service 301-922-5690 **Michigan** - Skyscanners 517-835-1239 **Minnesota** - Earth-Star Comm., Inc. 612-768-1916; M.I.S. 507-889-6831; Mid-Central 612-547-2388; Skyvision 218-739-5232 **Mississippi** - Video Specialty 601-728-7700 **Nebraska** - Chief Industries 308-382-8820 **New York** - Sat-Tel East 315-638-8538 **North Dakota** - Mid-West Satellite 701-742-3573 **Ohio** - American Satellite 614-279-8833 **Oklahoma** -Alpha Omega 405-286-7116; Cimarron Dist. 405-727-4259; PCM of OK 918-687-6804; Superior Satellite 919-742-2353 **Oregon/Washington** - Howard's Satellite Co. 503-942-8749 **South Dakota** - Mid-West Satellite 605-225-8136 **Tennessee** - National Micro Dynamics 615-892-3901; Little Dipper Sat. 615-538-5233 **Texas** - Blue Star Wholesale 214-657-0521; VIDCO Electronic 214-757-4911; Sat Shop 512-259-1075 **Virginia** - Bowling-Linkous & Assoc. 703-988-7862; IVS 1-800-732-1270 Star Teck 703-387-0062 **West Virginia** - Sky Sweeper 606-237-7346.

move, honored the former president of SPACE by voting him back on the board.



Edward L. Gibson is Birdview VP.

Edward L. Gibson has been promoted to vice president and general manager of Birdview's marketing division.



Chris Ackerly is new at Gensat.

Chris Ackerly has been hired as marketing manager for Gensat Communications. He was formerly engineering manager at Philips Electronics.

Norsat International has added Dennis Shouldice's Skytrak Earth Stations of Vancouver, British Columbia, to its distribution network. Shouldice will be a manufacturer's representative for the Canadian market.

R. David Butler has been promoted from general manager to vice president of marketing/advertising for Television Satellite Communication Systems in Miami, Florida. Butler joined the firm two and a half years ago as a consultant and salesman.

Thomas Gradie has joined Spectrum Consulting Services as an associate for public relations. Gradie has a bachelor's degree in advertising from Syracuse University.

Chuck Dawson has been named president of Fantasy Unrestricted Network. Bruce Christy has joined the network as managing director, and Sharon Weeks has been named marketing liaison.

Jake Friesen has been named general manager of MISAT's headquarters in Penticton, British Columbia. Former Wespercom employee Linda Hopkins has joined MISAT as senior accounting officer at the Penticton plant.

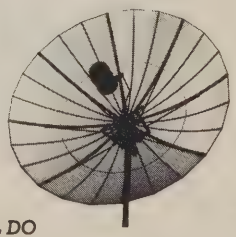
Larry D. Wyman has been named director of marketing for the commercial division of Kaul-Tronics.

David Baldwin has been named area sales representative for the commercial division. Ron Cockroft has been transferred from the company's headquarters in Richland Center, Wisconsin, to the new Marietta, Georgia, branch where he is manager.

Chuck Dawson is president of FUN.

ALONE AT THE TOP

ECI



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gain	41.5dBi
Weight	4
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When we analyzed our competition, we made a surprising discovery: Other manufacturers were copying the SAT-TEC R-5000 receiver. Even more surprising, most of these imitations cost more than the R-5000 and didn't perform as well!

You couldn't tell the imitations from the outside, of course. A green light here, a couple of red lights there, and they looked different. But inside—exact duplicates of the R-5000.

They say "imitation is the sincerest flattery." And it was gratifying to know that we were right in believing we had created a remarkable receiver. So remarkable, in fact, that it was the most copied receiver on the market! Still, we weren't going to take it lying down.

SAT-TEC R-5000XL—THE NEW AFFORDABLE

SAT-TEC, always in the forefront of satellite TV technology, introduces the best affordable yet, the R-5000XL.

The latest of the well-known R-5000 series, the R-5000XL offers refined functional simplicity and new-generation electronics technology. Designed to make satellite TV affordable, the R-5000XL doesn't sacrifice quality or performance. It delivers unexcelled picture quality. And it offers some unexpected features, such as the convenient A/B switch that automatically switches your TV from the VHF to the dish antenna.

The R-5000XL interfaces with the polarotor I, doubling your viewing capabilities, and a skew control easily adjusts the polarotor for optimum performance. Channel Lock AFC locks into the signal for uninterrupted viewing. For improved reliability and enhanced performance, we've added a crystal-controlled modulator and double-sided, plated-through circuit boards. Extras like these plus quality components throughout, mean your R-5000XL receiver is designed for a long life. And every R-5000XL is subjected to a series of quality controls that include triple-level board tests, receiver burn-in and final on-air checks.

THE R-5000XL SECRET

It won't be long before the copycats catch on to the R-5000XL. We can't put locks and chains on every receiver we sell. But even so, we're pretty sure nobody's going to duplicate our product. Our secret? Quality components and quality workmanship in every SAT-TEC receiver. Something copycats hate to copy. Manufacturers who copy other products are taking short cuts. And if they take short cuts in design, you can bet they'll take short cuts elsewhere, too. So why buy a copy when you can own the original for less? Ask your dealer for a demonstration of SAT-TEC's newest affordable, the R-5000XL, and see the difference SAT-TEC quality makes.

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SAT-TEC SALES, INC.

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(716) 586-3950
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SIGNALS

The Spoon was introduced in Dallas.

HARDWARE

Birdview introduced prototype of the Spoon, an elliptical satellite antenna, at the Dallas trade show. The 7-foot antenna with an offset feed is made of sheet steel and has not yet been priced. It is expected to be on the market this month. For more information, contact: Birdview Satellite Communications, 315 North Lindenwood Drive, Olathe, KS 66062, (913)829-0400.

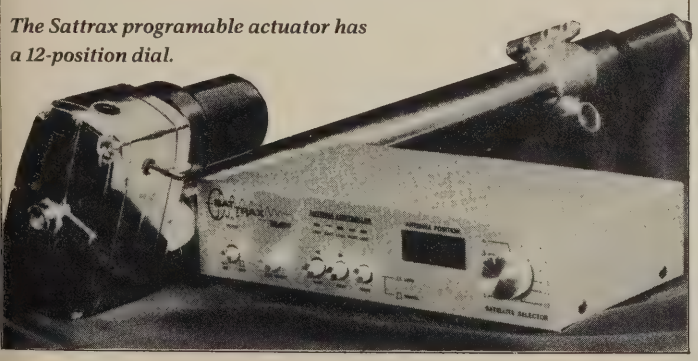
Channel Master has introduced a 2-meter satellite dish. A complete system built around the dish can be retailed for less than $1,400, says Channel Master. The company claims 37.1 dB gain at 63 percent efficiency and a beamwidth of 2.42 degrees at 3 dB. For more information, contact: Channel Master, Box 1416, Smithfield, NC 27577, (919)934-9711.

Viewstar will enter the TVRO market this month with the introduction of the VSS-1450 infrared receiver. For more information, call: (416) 298-9919.

Echosphere is now distributing the Echo Flex satellite control cable, which is being touted as the most advanced cable available. According to Echosphere, it separates by hand for easier TVRO installation and can be buried without conduit. It is available in One Run or One Run-Dual with either RG-6 or RG-59. Echosphere has also added the UST 1000 and UST 3000 Uniden receivers to its line. For more information, call: (303)761-4782.

Sattrax Satellite Communications, a division of Traxis International, has introduced its latest series of programable actuators. The Sattrax Model 36V18A sports a 12-satellite actuator dial, east-west limits, and a 36-volt ball screw actuator. Weather seals are standard on the actuator arm. The controller has manual east-west satellite selection capabilities. For more information, contact: Traxis International, 5603 Mahoning Ave., N.W., Warren, OH 44483, (216)847-7432.

The Sattrax programable actuator has a 12-position dial.



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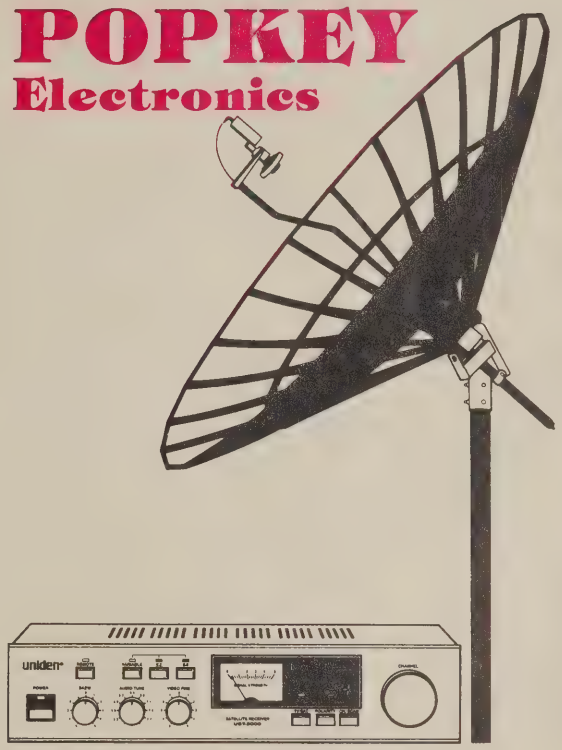

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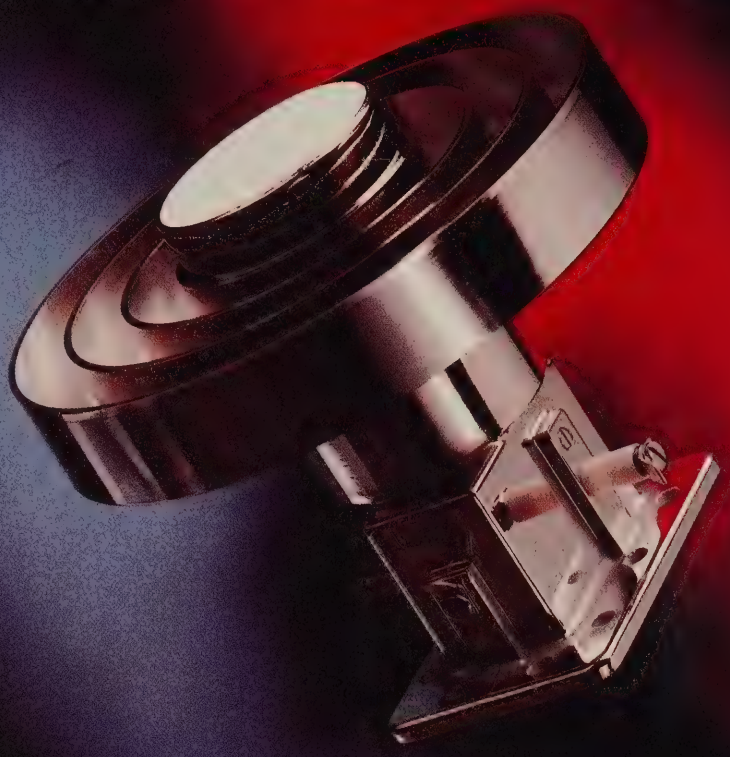

What about your polarizer?

Only one polarizer offers you the reliability of digital solid state at low cost: M/A-COM Omni Spectra. With no moving parts to freeze up or meltdown – no motors, rotors or gears – the low loss M/A-COM Omni Spectra polarizer offers you top quality reception, whether you're in Anchorage or Anaheim.

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In-line design makes the M/A-COM Omni Spectra polarizer easy to install. And with low cost electronic adapters, it's completely receiver compatible.

Best of all is the backing of an industry leader: M/A-COM Omni Spectra. For the name of the authorized dealer near you, call (603) 424-4111 or write: 21 Continental Boulevard, Merrimack, NH 03054.

M/A-COM OMNI SPECTRA, INC.

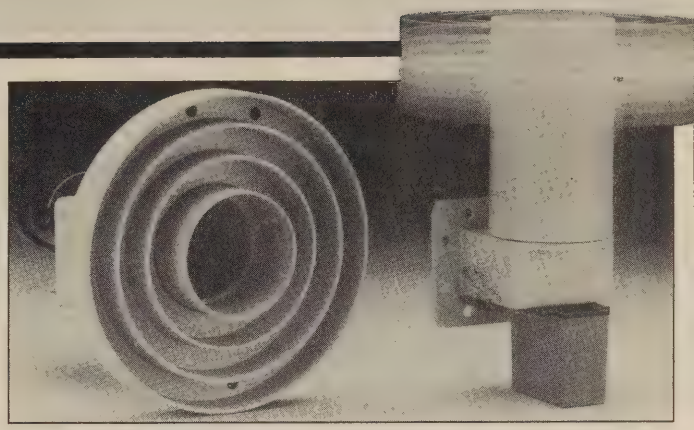
SIGNALS

Alumtech of Rowlett, Texas, has released its new line of Genesis satellite antennas. Designed by Carl Moody, the antennas can be installed in two hours, says Tim Pezold Alumtech marketing director. For more information, contact: Alumtech Corp., 2810 Lawing Lane, Rowlett, TX 75088.

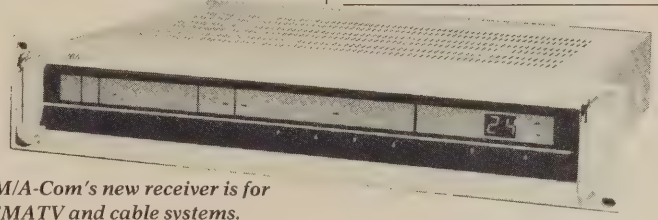
Ross Electronics has introduced four new products. The Corona is the company's most economical receiver. The Orion receiver has 48-channel capability and a built-in motorized antenna positioner control. The Altair receiver combines the features and performance of the Orion with stereo audio. The Callistro motorized antenna positioner control is designed as an add-on for systems without this feature. For more information, contact: Ross Electronics, 255 Madison St., Red Bluff, CA 96080, (916)529-0200.

NCP Enterprises, manufacturer of promotional items, is marketing desk sets that feature miniature satellite dishes emblazoned with company logos in conjunction with pen sets and/or business card holders. They are being advertised as gifts and promotional tools. For more information, contact: NCP Enterprises, 2701 119th St., Maple Ridge, British Columbia, Canada V2X 8S5, (604)464-2002.

Applied Parabolic Engineering has recently released its Paratech antenna. The company was founded last May in Ontario and is targeting the high end of the market. Production is currently a little more than 50 units per month. For more information, contact: Applied Parabolic Engineering, 14 Strathern Ave., Unit 23, Brampton, Ontario, Canada L6T 4P4, (416)791-5033.



Chaparral offers adjustable scalar rings on the Polarotor I and II.



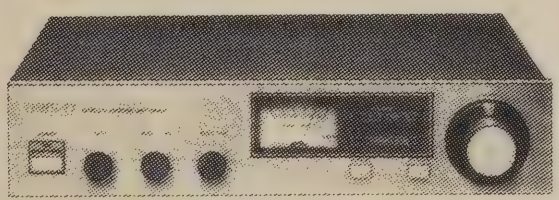
M/A-Com's new receiver is for SMATV and cable systems.

M/A-Com Cable Home Group has introduced a new commercial satellite receiver. The M/A-Com CSR-T1001 is designed for SMATV and cable TV systems. The receiver has two independently tunable audio demodulators and is LNB compatible. For more information, contact: Customer Service, M/A-Com Cable Home Group, P.O. Box 1729, Hickory, NC 28603, (704)324-2200.

Paullin Industries is offering a new vented actuator boot by QIK-Pro. The boots are made of neoprene rubber with self-retrieving folds for longer life and improved ice removal. The boot will fit actuators over a range of sizes without the need for an adapter. For more information, contact: Paullin Industries, 1446 State Route 60, Ashland, OH 44805, (800)821-7384.

Chaparral Communications has added a number of products to its line and offers adjustable scalar rings for the Polarotor I and II.

Wow! Precision Satellite Systems, Inc. has Uniden Receivers.



Uniden UST 1000

Dealers! Enter the exciting world of home satellite television with the UST 1000 from Uniden Corporation. This receiver is known for its crisp, clear video, ease of operation and reliability. Proven Uniden® quality assures years of exceptional performance and trouble-free entertainment.

UST 1000 features:
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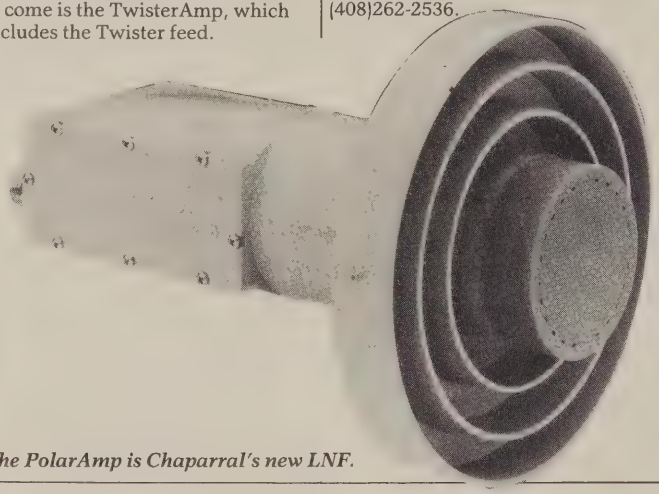
SIGNALS

New products include the Twister I, a solid-state feed designed for extremely cold conditions. It includes instantaneous switching, full skew compensation, and direct Polarotor I interfacing. The new Sidewinder is being promoted as the first dual feed with total skew compensation. Also new is the PolarAmp, which includes a feedhorn and LNA in a single casing. The PolarAmp is compatible with all Polarotor I controls. Soon to come is the TwisterAmp, which includes the Twister feed.

Chaparral has also announced that its servo motors are manufactured in Japan to Chaparral specifications. Gaskets, Polarotor I controllers, Polarotor II switches, and Twister coil housings are all made in Taiwan. All testing, boxing, and shipping, however, is done from the Chaparral plant in San Jose, California. For more information, contact: Sales Department, Chaparral Communications, 2360 Bering Drive, San Jose, CA 95131, (408)262-2536.



The PolarAmp is Chaparral's new LNF.

Ranger introduces mesh antennas.

Ranger Antenna has new mesh antennas available in both 9- and 11-foot sizes. The dishes are available in black or green and are UPS shippable. For more information, call: (503)474-6050.

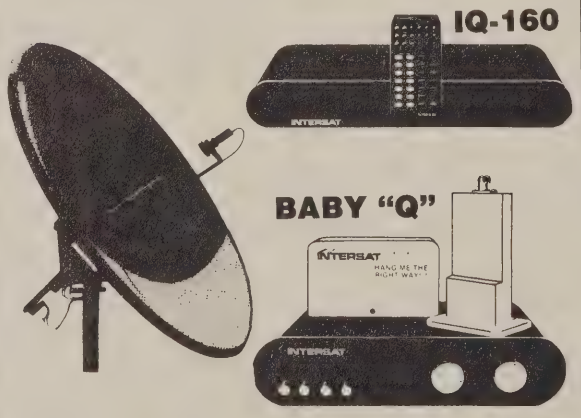
ICM Video has released a descrambler-compatible receiver. Model SR-4600P will directly interface with all known decoding hardware without the need for any modifications, according to ICM. The company claims the receiver is fully compatible with M/A-Com's VideoCipher descrambler. For more information, contact: ICM Video, 10 N. Lee, Box 26330, Oklahoma City, OK 73126.

Prestolite Specialty Wire Products has introduced a new line of satellite earth station cable. The new product line will include one-step, direct-burial dish control cable and multiconductor actuator cable. Distributors will be able to order the cable built to their own specifications, including a choice of gauges, coaxial designs, and color codes. They will also be able to sell the cable under their own names if desired. Prestolite is a division of Allied Corporation. For more information, contact: Prestolite Specialty Wire Products, #1 Greenwood Road, Sidney, NE 69162, (800)272-9999.

PROGRAMING

Kaul-Tronics is airing a weekly hour-long video newsletter. The program, which covers technical subjects as well as product and pricing news, began this summer on a monthly basis. The program can be seen every Tuesday at 2 p.m. ET (Satcom 4, tr. 16).

Our satellite systems from INTERSAT™ the innovators in satellite technology, offer you every option available in today's market.



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Although its unanimous that Phantom Engineering's IFP1x IF Processor is unsurpassed for eliminating sparklies, enthusiastic dealers are divided on the best application.

One group asserts it's a problem-solving tool, indispensable for dealing instantly, on-site, with TI, long cable runs, trees and other signal obstructions. These dealers prepare for the unexpected and bring a IFP1x to every installation, "just in case".

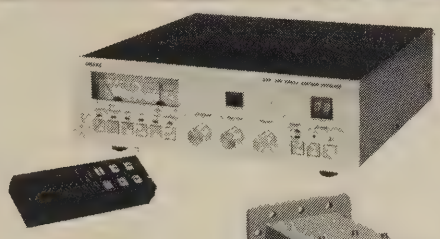
Other dealers argue that since the IFP1x compensates for a small dish, weak transponders and splitters, improves threshold response, and controls IF overload, it's really a "performance booster" - and recommend it for their most demanding customers.

"We can't argue with either approach" comments Darryl "Andy" Anderson, President of Phantom Engineering. "The bottom line is customer satisfaction with picture quality, and, in fact, the IFP1x is designed to improve the performance of virtually any system, old or new, high-end or low-end." Bill Goldsmith, Director of Engineering is equally emphatic: "Simple sparkle filters or exotic notch filters just can't match it's versatility and performance.

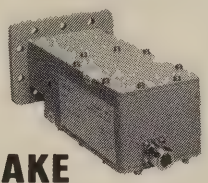
Also refusing to take sides, Phantom's Marketing Chief Denise Weber works to promote all the IFP-1x's features to dealers. "It maximizes any systems potential" says Weber, "and that fact makes it a key component in today's competitve market." Dealers who haven't taken advantage of the IFP1x should see their own distributor or contact me for the nearest Phantom distributor, soon."

Phantom Engineering's address is 16840 Joleen Way, Morgan Hill, CA 95037 (408) 779-1616.

Satellite TV Systems & Components



Paul Wittkamp
TVRO Sales



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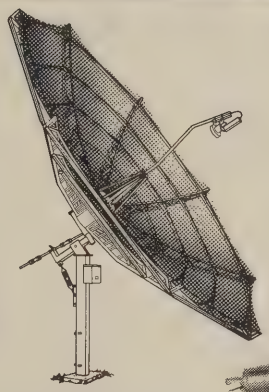
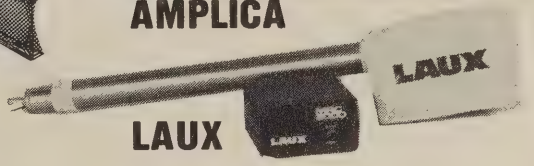


PARACLIPSE

AMPLICA

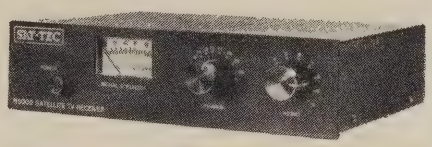


LAUX

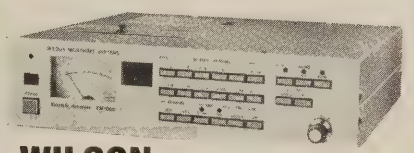
WHOLESALE ONLY

DEALERS - write us on your letterhead for Price List

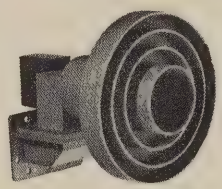
HOUSTON



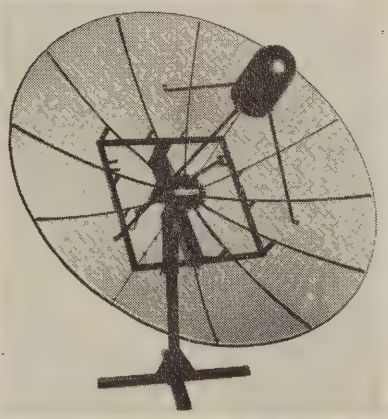
SAT-TEC



WILSON

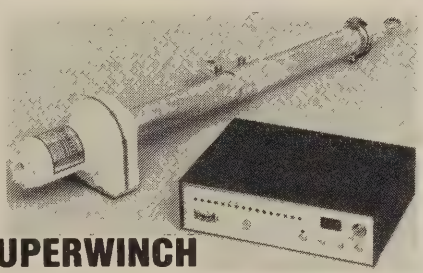


CHAPARRAL



also. . .

- JANEIL
- NEMAL
- NEWTON
- REGENCY



SUPERWINCH

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AMATEUR ELECTRONIC SUPPLY® Inc.

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Please use WATS line for Placing Orders.
For other information, etc. please use Regular line.

SIGNALS

The Learning Channel welcomes the new year with the premiere of *Enterprise USA*, a series designed to help viewers get a grip on the "mechanics of money." *Enterprise USA* will offer information on how to get the most out of savings, how to borrow wisely, how best to obtain a small loan, and how to plan for the future. Hosted by financial specialist Wendell Webb, the half-hour show will air each Wednesday at 8:30 a.m. ET, and will be repeated Sundays at 1 p.m. This month, *Enterprise USA* visits the 22nd Annual Recreational Vehicle Show in Louisville, Kentucky, where it will compare the cost of RV vacations to those using other modes of travel, and will take a look at the fuel efficiency, financing, and future of recreational vehicles.

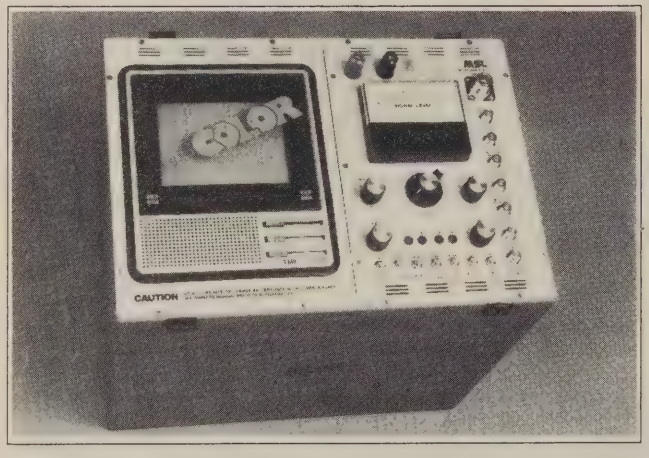
Two other new series, which address the growing need to understand and use computer technology, are also being introduced by The Learning Channel this month. *The Computer Series for Professionals* offers practical applications for the professional who seeks a broader understanding of the role of computers in corporations today. The 13-part series premieres Monday, January 7, at 8 a.m. ET, with a repeat on Saturdays at 2 p.m. *The Computer Program*, produced by the British Broadcasting Corporation, provides information to help viewers use a microcomputer. The 10 half-hour programs will air on Tuesdays at 8 a.m., beginning January 8, and will be repeated on Saturdays at 1 p.m. and Sundays at 9 a.m. ET.

Winegard has released *The Remarkable Dish*, a videotape for dealers to play for customers. The seven-minute tape explains how satellite TV works and includes footage from NASA. For more information, contact: Winegard Sales Office, 3000 Kirkwood St., P.O. Box 1007, Burlington, IA 52601, (319)753-0121.

MTV Networks Inc. will launch its second music video service. VH 1, short for Video Hits One, is scheduled to launch January 1 (Satcom F3, tr. 15). The 24-hour service will be aimed at adults from 25 to 49 years old—in contrast to MTV's younger audience of 12- to 34-year-olds. According to the network, the new service will expose different musical artists.

MTV launches its second programing service this month.

Indispensable!



The DR601-A Microwave Test Set represents the first major breakthrough in TVRO field test equipment. Specifically engineered for the professional installer, the 601 provides immediate answers to the time consuming problems of the TVRO industry.

American Microcom Systems
Ohio 800-421-7131

Precision Satellite Systems
Florida 800-468-3474

Startech, Inc.
Virginia 703-387-0062

Kelgo International Ltd.
Georgia 404-447-9450

Delstar Systems, Inc.
Texas 713-776-0542

Satellite Receivers Ltd.
Wisconsin 414-432-5777

Cartwright Communications
800-543-8614

Hoosier Electronics
Indiana 800-457-3330

404 435-8630

MANUFACTURED IN U.S.A. BY MICRO SCIENTIFIC LABS, INC. ATLANTA, GEORGIA

Fly The Winged Horse To Higher Profits!

Everything You Have Always Wanted In A Distributor

There is more growth and profit potential in the TVRO industry than in most of the other industries in the country. The key to your success in this industry is the ability to satisfy the customer. PEGASUS supports your efforts to assure success. We can respond to your phone-in orders by shipping the same day, this allows you easier control of your inventory. Our competitive wholesale pricing gives you a large margin of profit while fully servicing your customer. And most important to your success, we supply only the highest quality products at each price level which minimizes your service problems. Our product line includes.

Luxor	Bearcat	MSE
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NEW

ASTRO PRO™

DISH CONTROL Z-500

THE BEST ANTENNA POSITIONER EVER....

PBI is proud to introduce our Fully Programmable antenna positioner Astro Pro Z-500.

This microprocessor-based unit is the end product of over two years' research and development. And the result? Smart engineering, **sleek, contemporary design,** straightforward **user-friendly** programming routine. You name it. Every detail has been thought of and taken care of.

Astro Pro Z-500 Standard Features Include:

- 81 programmable positions
- 3-digit alphanumeric LED readout
- Soft touch tact switch
- Key LOCK-IN on one single satellite
- Parental LOCK-OUT limits viewing to preselected satellites
- Other functions include: SCAN, STALL, REVIEW and E/W LIMIT
- Status Display informs viewers of antenna movement, E/W limit, LOCK and STALL
- Modular plug-in PC boards reduce service turnaround time to a minimum
- Built-in power backup for memory retention. Never need to change battery
- Optional full function infrared REMOTE CONTROL available
- 36V DC 18" heavy duty triple-weather-sealed actuator
- Full one-year warranty

We are proud to make it. You will be proud to carry it, too. Write or call us for detailed information.

PBI

Pro Brand International, Inc.

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Continental Satellite Systems

ANNOUNCES

DEALER SUPPORT

In the beginning...

TVRO dealers were left pretty much on their own when it came to marketing. Manufacturers acted as if their job ended at their shipping department. Now, Continental's out to right that wrong.

Continental Satellite Systems has always been the leading manufacturer of the finest aluminum mesh antenna in the world. We are so confident of our dish we guarantee it to out perform any other dish of the same size on the market. We are now proud to announce a new concept in dealer/distributor back-up marketing.

The Continental plan is designed to give a real boost to sales. It's a multi-faceted, multi-media package providing information, materials and financial support – including:

offer good to direct dealers and distributors within 7 days of purchase

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***CO-OP ADVERTISING**
We all benefit if you banner the Continental name to attract customers, so we're willing to pay up to 50% of your advertising dollar.

***TRAINING TAPES**
What good is buying the best, if improper installation will mean less than perfect performance? These video tapes show step-by-step installation procedure – with little secrets to reduce those sparkles!

***PROMOTIONAL TAPES**
What's TVRO all about? These video tapes will explain the hows and whys of satellite TV to your customers. Naturally, there's a plug for Continental at the end!

***POSTERS**
Several styles in full color to dress up any showroom. Shows the customer graphically that the Continental Satellite antenna blends beautifully with any landscape. As they say, one picture....

***SPEC SHEETS**
Better organization, more information than ever. Detailed technical specifications give the dealer the confidence of knowing that he is selling the best.

***COUNTER CARDS**
Cards containing an attractive display of brochures, to remind the customers later of all the good things about satellite TV – and where to buy, of course!

***AD MAKE-UP KITS**
Includes camera-ready headlines, ad copy and illustrations. Lets you develop individual, professional looking ads in no time. Full instructions and suggestions are included.

***WINDOW AND VEHICLE STICKERS**
Identifies you to the world as an authorized Continental Dealer. Display them proudly.

Lets face it, in the uncharted galaxy of this marketplace isn't it nice to know you're not alone?

CONTINENTAL
PARABOLIC PERFECTION

Continental Features:
7 sizes from 6' – 30'
12 colors available
UPS Shippable

Continental Satellite Systems
15450 For-Mor Court
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Call your Continental Distributor for more details

CA	• CONSOLIDATED SATELLITE SYSTEMS, Fresno, 209-227-8942
IL	• SIMMONS TOWER, Bonnie, 618-244-3763
KS	• MIDWEST SATELLITE CORP., Wichita, 1-800-255-1382 Ex. 58
LA	• SATELLITE EARTH STATIONS, Mamou, 1-800-762-2110
	• JOMIL ELECTRONICS, Covington, 1-800-654-9144
MI	• RASMUSSEN SATELLITE DISTRIBUTORS, Big Rapids, 616-796-3057
MN	• EARTH STAR COMMUNICATOINS, Fridley, (612) 786-1916
OH	• OHIO SATELLITE SYSTEMS, Logan, (614) 385-8296
PA	• KELGO NORTH, Pittsburgh, 1-800-321-0600
RI	• NORTHEAST SATELLITE SYSTEMS, Portsmouth, 1-800-446-4633
TN	• BEST RECEPTION SYSTEMS, Rockwood, 1-800-321-0281
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BERMUDA	• BELL SERVICES LTD., Hamilton, (809) 292-4500
CANADA WEST	• SEL-TEC (Flack Electronics Ltd.), Oliver, B.C., 604-498-2968
CAYMAN ISLANDS	• STEREO ISLANDS ELECTRONICS, Georgetown, (809) 949-5211
HAITI	• WORLD COMMERCIAL AGENCIES, Port Au Prince, (509) 1-62989
MEXICO	• VIDEO COMPONENTS WEST, Chula Vista, (619) 427-0516
PACIFIC	• SATELLITE SYSTEMS, Guam, (671) 734-3200
PUERTO RICO	• CONTINENTAL CARIBBEAN, Dorado Del Mar, (809) 796-1897

AIMERS BY DRACO

- 27-in. Throw
- 2000-lb. Load
- Will Not FREEZE
- 1 Year Warranty

AIMER III

The complete answer to satellite dish movement and polarotor control. Up to 64 satellite locations with microprocessor accuracy of position and polarotor. Easy to use — simply turn the knob until the satellite reads out and push "GO TO." The Aimer III does the rest. Built-in power supply — low profile — superb styling.

ACTUATOR GIMBAL BRACKET

Eliminates side and up and down pull on the Actuator. Prevents premature failure of the power drive unit.

AIMER II

Precise antenna movement with push button ease. Built-in power supply, dynamic breaking. A solid solution to low cost dish power positioners.

POWER ACTUATOR

Designed and built for satellite dish movement. Sealed tubes, solid lubrication, gimbal rod end, Timken roller bearings, anti-jamming. Rated at over 2000 lbs. The Draco Power Actuator operates at 12 to 36 volts with self-resetting current protection. Infrared light eruptors are impervious to all electrical interference. Positively the best Actuator built.

FOR MORE INFORMATION CONTACT:

DRACO LABORATORIES, INC., 1005 Washington St., Grafton, WI 53204 U.S.A. • (414) 377-0770

Technically Draco's Ahead

- Engineered and built by Draco for the satellite industry.
- Up to 2000 pound load.
- Full 27 inch throw.

1 SWIVEL ROD END Attaches firmly to dish bracket, but still allows angular play. Prevents any side loads on the end of the Actuator.

2 SLIP CLUTCH Patent pending clutch slips only when Actuator reaches end of travel. Never slips under load.

3 ROD WIPER AND SEAL Built directly into the outer tube. Rod wiper removes all foreign material, such as dirt or ice, assuring clean, smooth operation. Polyurethane seal prevents moisture from running into the Actuator.

4 HEAVY OUTER TUBE Made of .187 thick 6061 aluminum DOM. Heat treated to T-6 for extra strength, then black anodized for corrosion resistance inside and out.

5 HIGH EFFICIENCY THREAD. Unique thread design chosen for maximum efficiency and rolled to provide a precision work hardened surface. This design also prevents jamming at end of travel.

6 SOLID ROD LUBRICANT Impregnated into the solid steel rod. This lubricant will not dry out, wipe off or run off. The impregnation will last for life and is unaffected by temperature. Tested throughout the temperature extremes experienced in actual operation.

7 GIMBAL BRACKET Allows 360° horizontal and 32° vertical motion. Keeps Actuator at the most efficient angle and the load in pure compression or tension to prevent any failure due to side loading. Powder, high temperature glazed coating.

8 SOLID GIMBAL LUBRICANT Washers made out of space aged Molybdenum Disulfide for full permanent lubrication.

9 NYLON INNER TUBE SUPPORTS Suspends inner tube to prevent seal distortion and provides nylon sliding surfaces to minimize friction and prevent scraping.

10 MACHINED BRONZED ACME NUT For positive control without slop. Machined for maximum efficiency with unique three lead thread.

Aimer II
BY DRACO

Semi-Programmable, low profile, completely self-contained with built-in power supply. Exclusive fast pass allows you to input any satellite location in less than 12 seconds, then simply push GO TO and the Actuator makes one smooth run to the location. Built-in memory uses newest technology E Prom for total back-up during any length of power failure. Full three digit LED readout.

Semi-Programmable. Program any location in less than 12 seconds and push GO TO. The rest is automatic.

FEATURES Aimer II

- Semi-Automatic or Manual Mode
- Programmable Travel Limits
- Repeatability ±.0042 inches
- Soft Dynamic Braking
- Non-Volatile Memory
- Overload Protection
- Built-in Power Supply
- Single Chassis Design
- Self-Diagnostics
  - Fuse Detect
  - Jam Detect
  - Memory Fault Detect
- Physical Specs
  - Ship Wt. 9.00 lbs.
  - Height 1.70 in. 4.30 cm.
  - Width 9.00 in. 22.90 cm.
  - Depth 7.75 in. 19.70 cm.

FEATURES

- Easy to read, large display.
- 64 satellites that take care of satellite location and polarity.
- User programmable, which allows you to put in any alphanumeric combination, so you can add any satellite and call it by name (up to 4 digits).
- Programmable polarity with automatic skew and automatic satellite format.
- Optional Tuner (Receiver) interface allows you to have the receiver change polarity and the Aimer III will automatically set skew and format.

INNOVATIVE ELECTRONICS Manufactured by DRACO LABORATORIES, INC.

AIMERS BY DRACO

9 NYLON INNER TUBE SUPPORTS Suspends inner tube to prevent seal distortion and provides nylon sliding surfaces to minimize friction and prevent scraping.

10 MACHINED BRONZED ACME NUT For positive control without slop. Machined for maximum efficiency with unique three lead thread.

11 BELLEVILLE WASHERS Preloads the roller bearings, taking up any slack in bearing mounts

12 DUAL TIMKEN® TAPERED ROLLER BEARING Designed to take full thrust and radial loads.

13 MOISTURE DRAIN Positioned to drain any moisture which may accumulate, due to condensation. Note: Moisture drains past the bearings, not through the bearings.

14 SPECIAL BEARING LUBRICANT For full viscosity from +400°F to −44°F. Moly-Coat 44.®

15 SEPARATELY SEALED GEAR BOX For full moisture protection and clean operation. Will not freeze or corrode as the complete gear box is sealed and lubricated.

16 PERMANENT GEAR LUBRICANT Consists of special Dow lubricant which maintains viscosity through temperature range of −44° F. to +400° F.

17 POWERFUL D.C. MOTOR 12 to 36 VDC permanent magnet motor. Provides the needed torque at a safe, low voltage.

18 OPTO-INTERRUPTOR The most positive sensing, using infrared interruptors. Resolution of .00169 inches of linear movement per pulse. Will not pick up extra pulses from static in the air, lightning, or engine ignition (such as lawn mowers).

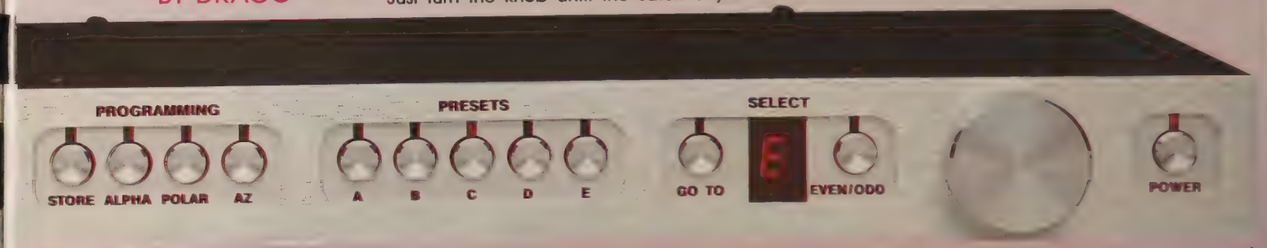
19 G-10 FIBERGLASS CONTROL BOARD Moisture-proof, conformal coated to prevent corrosion.

20 WEATHERPROOF SEALED PROTECTIVE COVER Made of ABS with impregnated material to prevent deteriorating in rain, snow or shine.

21 SOLID STEEL GEARS Carbon nitride heat treatment for extra hardness. Machined for positive smooth operation.

Aimer III
BY DRACO

The complete answer to satellite dish movement and polarity. Up to 64 satellite locations with microprocessor accuracy of position and polarity. Simple to operate. Just turn the knob until the satellite you want reads out and push GO TO. The Aimer III does the rest. Low profile., completely self-contained with superb styling that fits in with any decor.



Aimer III will automatically set skew and format.

- Single chassis design, low profile with built-in power supply.
- Six conductor cable for full operation of Aimer and polarity feed horn (Polarotor I type).
- Internal resolution of .00169 inch per pulse.
- Repeatability of ± .0068 inches zero to full load.
- Programmable travel limits.
- Manual or automatic fine tune of Actuator and polarity.
- Parental Lock can be locked on a specific satellite, or locked between satellites.
- Automatic 8 hour time-out of Parental Lock if you forget your code.
- Self-diagnostics which tell you:
  - If fuse is burned out, or wire in cable broke, display reads "Fuse".
  - If user goes to one of the programmed limits, display reads "Lim".
  - If dish jams or mount jams, display reads "Jam".
- Non-volatile memory maintains memory of all information during a power failure for up to six months.
- Even (E), Odd (O) polarity of transponders (channels) 2, 4, 6, 8, etc. would be Even (E); 1, 3, 5, 7, etc. would be Odd (O).
- Push button polarity change.
- Physical Specs
  - Ship Wt. 13 lbs.
  - Height 1.7 in. 4.3 cm.
  - Width 16.5 in. 19.3 cm.
- Optional Tuner (Receiver) Interface.
  - If receiver has polarity control with skew, use Interface II.
  - If receiver has polarity control without skew, use Interface I.

*Timken is a Registered Trademark of Timken Bearing
*Molycoat is a Registered Trademark of Dow Chemical.

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AiMERS BY DRACO

11 BELLEVILLE WASHERS Preloads the roller bearings, taking up any slack in bearing mounts

12 DUAL TIMKEN® TAPERED ROLLER BEARING Designed to take full thrust and radial loads.

13 MOISTURE DRAIN Positioned to drain any moisture which may accumulate, due to condensation. Note: Moisture drains past the bearings, not through the bearings.

14 SPECIAL BEARING LUBRICANT For full viscosity from +400°F to −44°F. Moly-Coat 44.®

15 SEPARATELY SEALED GEAR BOX For full moisture protection and clean operation. Will not freeze or corrode as the complete gear box is sealed and lubricated.

16 PERMANENT GEAR LUBRICANT Consists of special Dow lubricant which maintains viscosity through temperature range of −44° F. to +400° F.

17 POWERFUL D.C. MOTOR 12 to 36 VDC permanent magnet motor. Provides the needed torque at a safe, low voltage.

18 OPTO-INTERRUPTOR The most positive sensing, using infrared interruptors. Resolution of .00169 inches of linear movement per pulse. Will not pick up extra pulses from static in the air, lightning, or engine ignition (such as lawn mowers).

19 G-10 FIBERGLASS CONTROL BOARD Moisture-proof, conformal coated to prevent corrosion.

20 WEATHERPROOF SEALED PROTECTIVE COVER Made of ABS with impregnated material to prevent deteriorating in rain, snow or shine.

21 SOLID STEEL GEARS Carbon nitride heat treatment for extra hardness. Machined for positive smooth operation.

Aimer IV BY DRACO

The complete answer to satellite dish movement, polarity and remote control. Microprocessor accuracy of position and polarity with self diagnostics programming. Simple to operate, it works with either remote or manual control for your convenience. Superb styling that fits in with all decor and most popular receivers.

- Aimer IV will automatically set skew and format.
- Single chassis design, low profile with built-in power supply.
- Six conductor cable for full operation of Aimer and polarity feed horn (Polarotor I type).
- Internal resolution of .00169 inch per pulse.
- Repeatability of ±.0068 inches zero to full load.
- Programmable travel limits.
- Manual or automatic fine tune of Actuator and polarity.
- Non-volatile memory maintains memory of all information during a power failure for up to six months.
- Push button polarity change.
- All the popular features of Aimer III but with easy to use remote control.
- Six presets with color coding.
- Stylish contemporary design.
- Optional receiver interface.
- Remote control compatibility with XTRA-LINK.

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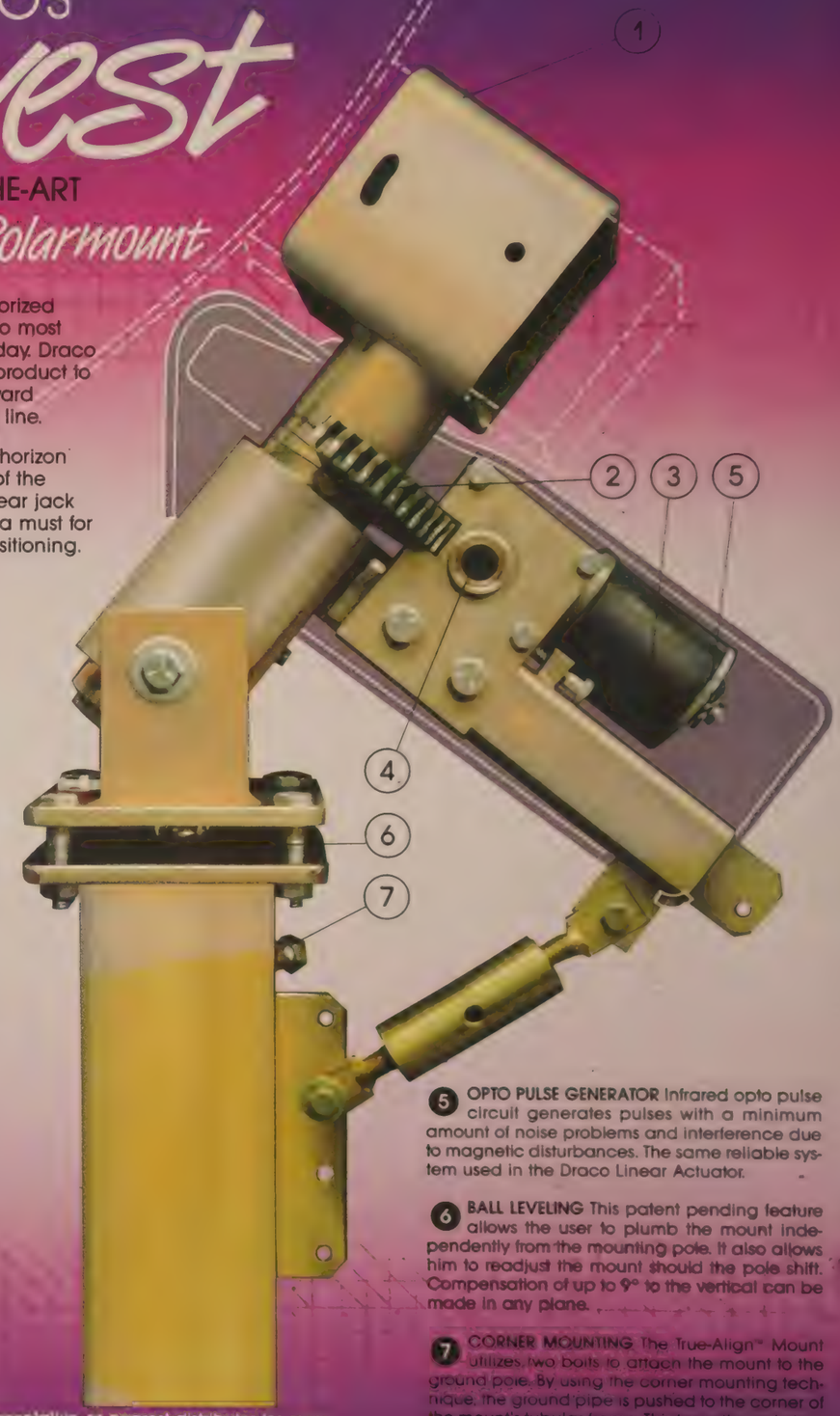
DRACO'S Newest

STATE-OF-THE-ART Motorized Polarmount

Draco's Tru-Align™ Motorized Polarmount is compatible to most antennas on the market today. Draco offers this STATE-OF-THE-ART product to the TVRO industry with upward compatibility to its product line.

If you need horizon to horizon flexibility to zero in on any of the satellites without current linear jack limitations, the Tru-Align™ is a must for your motorized antenna positioning.



COMPARE THE FOLLOWING FEATURES

1 DECLINATION ADJUSTMENT Patent pending declination adjustment is accomplished by means of a single bolt gravity feed system.

2 DOUBLE WORM GEAR DRIVE Dual worm gears with adjustments for backlash compensation. Each mount is fine tuned and can be re-adjusted in the field to compensate for any wear that may occur over the years.

3 24 DC MOTOR Safe, low voltage, permanent magnet DC motor provides the most horse power for weight.

4 DUAL NEEDLE THRUST BEARINGS Are used in the main gear drive, together with adjustments to compensate for gear meshing depth and backlash.

5 OPTO PULSE GENERATOR Infrared opto pulse circuit generates pulses with a minimum amount of noise problems and interference due to magnetic disturbances. The same reliable system used in the Draco Linear Actuator.

6 BALL LEVELING This patent pending feature allows the user to plumb the mount independently from the mounting pole. It also allows him to readjust the mount should the pole shift. Compensation of up to 9° to the vertical can be made in any plane.

7 CORNER MOUNTING The True-Align™ Mount utilizes two bolts to attach the mount to the ground pole. By using the corner mounting technique, the ground pipe is pushed to the corner of the mount's tubular frame. This traps the pole in a triangular position, being supported on two sides of the square tube and pressed into this corner by the two bolts.

Contact your Draco representative, or nearest distributor for more information regarding the True-Align™ Mount. Draco is happy to offer engineering services required to design and develop the interface between the True-Align™ and your favorite antenna.

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SIGNALS

Sean Young, who stars in the new science fiction movie *Dune*, will portray Rosemary Hoyt in the Showtime production of *Tender Is the Night*. She joins a cast that includes Mary Steenburgen, Peter Strauss, Edward Asner, and John Heard. The six-hour miniseries, based on F. Scott Fitzgerald's novel, is currently in production in Europe.

American Movie Classics (Satcom F4, tr. 10) has signed a 10-year agreement with RKO pictures, acquiring television rights to its entire library—nearly 700 films—for use on the channel. Some of the films included in the RKO library are *Citizen Kane*, starring Orson Welles; *Fort Apache*, with Henry Fonda, John Wayne, and Shirley Temple; *The Hunchback of Notre Dame*; *Room Service*, which stars the Marx Brothers and Lucille Ball; *King Kong*; and *The Three Musketeers*.

WGN, the Chicago superchannel, will air live Chicago Sting indoor soccer games this winter. The Chicago Sting has had a successful indoor career, qualifying for the playoffs in each season, with two divisional awards. The games this month are: the Sting vs. Baltimore Blasts on January 6 at 1 p.m. ET, and the Sting vs. St. Louis Steamers at 8:30 p.m., January 30.

Watch the Chicago Sting on WGN.

Trivia is the hottest thing in America right now, says Earle Ziff, the producer and co-host of Home Television Network's newest game show, *Movie-Talk America*. Viewers can call collect from anywhere in the United States and answer film and television questions to win prizes. Consolation prizes are given for incorrect answers. HTN airs six feature films each night that begin every two hours or so after 4 p.m. ET. *Movie-Talk America* airs at two different times after the movies, one night per week. It may be expanded to two or three nights each week if interest level allows.

Pope John Paul II's weekly Angelus Mass will now be available to viewers every Sunday, beginning this month. "This is the first time that American Catholics are able to hear the Pope's Mass the same day it is celebrated in Rome," notes Priscilla Davis, director of television operations for Netcom, a satellite television transmission company. Netcom relays the signal from Rome to New York via Intelsat. The signal is then uplinked to Satcom F4 and received by Santa Fe Communications, which edits the Mass into a 30-minute program that airs in the United States the same morning.

The Futures Report offers daily financial news reports that are devoted exclusively to commodity and futures markets. Cable News Network (CNN) airs the report on weekdays (Satcom F3, tr. 8) at 7:30 a.m., 5:30 p.m., and 12:30 a.m. ET. *The Futures Report*, which is designed to reflect the growth of 24-hour trading, reports market news, analysis, investor information, and feature stories. On the early morning report, viewers can learn what European gold prices are before the domestic markets open, and on the late report, they may learn the status of foreign currencies in Asian markets.

A new Sunday-morning children's show has been added to CBN's lineup. *Superbook Club*, an hour-long program beginning at 11 a.m. ET, will be hosted by singer/actress Debbie McLeod. The program will feature a mix of music, "kid talk," fun and games, learning experiences, and CBN's animated series *Superbook*. A children-only studio audience will take part in the show's activities. □

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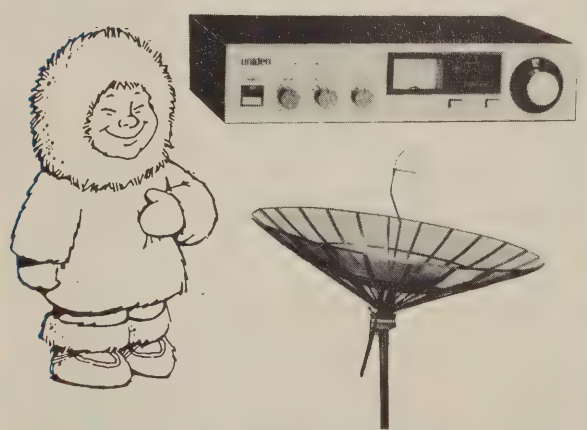

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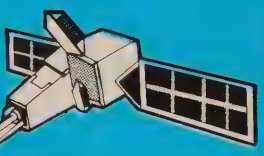

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6	SIN (Spanish Int'l Network)	Susan Catapano	(212) 502-1300	460 West 2nd Street, New York, NY 10036
7	CNN (Cable News Network)	Patty Holland	(404) 827-2250	1050 Techwood Drive NW, Atlanta, GA 30318
8	Cable Music Channel (CMC)	Eric McLamb	(404) 827-1799	1050 Techwood Drive NW, Atlanta, GA 30318
9	Business Times (West)	Luna Wilcox	(212) 247-7030	727 11th Avenue, New York, NY 10019
9	ESPN Blackout Network	Roger Williams	(212) 661-6040	355 Lexington Avenue, New York, NY 10017
10	The Movie Channel	Marilyn Sollar	(212) 708-1677	1633 Broadway, New York, NY 10019
11	CBN Cable Network	Tom Hohman	(804) 424-7777	CBN Center, Virginia Beach, VA 23463
14	The Movie Channel	Marilyn Sollar	(212) 708-1677	1633 Broadway, New York, NY 10019
15	WOR (New York)	Gilbert Korta	(315) 455-5955	P.O. Box 4872, Syracuse, NY 13221
17	BET (Black Entertainment TV)	Ed Maddox	(202) 337-5260	1050 31st Street NW 2nd Floor, Washington, DC 20007
18	WTBS (Atlanta)	Patty Holland	(404) 827-2250	1050 Techwood Drive NW, Atlanta, GA 30318

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Tr. #	Service	Contact		Address
1	PTL Satellite-The Inspirational Network	Jack Hightower	(704) 542-6000	7224 Park Road, Charlotte, NC 28279
3	WGN (Chicago)	Robert Price	(800) 331-4806 (918) 665-6690	3801 S. Sheridan Rd., Tulsa, OK 74145
4	Financial News Network	Chris Taylor	(213) 450-2412	2525 Ocean Park Blvd., Santa Monica, CA
6	SPN	Ray Klinge	(918) 496-0101	P.O. Box 702160, Tulsa, OK 74170
7	ESPN	Roger Williams	(212) 661-6040	355 Lexington Ave., New York, NY 10017
8	CBN Cable Network	Tom Hohman	(804) 424-7777	CBN Center, Virginia Beach, VA 23463
14	CNN (Cable News Network)	Patty Holland	(404) 827-2250	1050 Techwood Dr. NW, Atlanta, GA 30318
15	CNN Headline News	Patty Holland	(404) 827-2250	1050 Techwood Dr. NW, Atlanta, GA 30318
16	Home Theatre Network	Jerry Smith	(203) 965-6074	41 Harbor Plaza Drive, Stamford, CT 06904
16	The Learning Channel	Lenda Washington	(202) 331-8011	1200 New Hampshire Ave. #240, Washington, DC 20036
18	Eternal Word Television Network	Ginger Scalici	(205) 956-9537	125 Simpson St. NW, Atlanta, GA 30339
18	Reuter Monitor Service (s)	Ron Owens	(212) 732-2400	2 Wall Street, New York, NY 10005
18	National Jewish Television	Joel Levitch	(212) 549-4160	2621 Palisade Ave., Riverdale, NY 10463
19	C-SPAN	Brian Gruber	(202) 737-3220	400 North Capitol St. Suite 155, Washington, DC 20001
22	MSN (Modern Satellite Network)	George Umberto	(813) 541-7571	5000 Park St. North, St. Petersburg, FL 33709

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3	Country Coast-To-Coast	Bob Bruton	(800) 527-4892 (214) 991-9200	12655 N. Central Expwy. #600, Dallas, TX 75243
3	Electronic Program Guide	Robert Price	(800) 331-4806	3801 S. Sheridan Road, Tulsa, OK 74145
3	Moody Broadcasting Network	Jim Goodrich	(800) 621-7031	820 North LaSalle, Chicago, IL 60610
3	Rock America	Bob Bruton	(800) 527-4892 (214) 991-9200	12655 N. Central Expwy. #600, Dallas, TX 75243
3	Seeburg/Lifestyle Music	Sherrill Williams	(800) 334-1561 (919) 851-5823	5706 New Chapel Hill Rd., Raleigh, NC 27607
3	Stardust	Bob Bruton	(800) 527-4892 (214) 991-9200	12655 N. Central Expwy. #600, Dallas, TX 75243
3	StarStation	Bob Bruton	(800) 527-4892 (214) 991-9200	12655 N. Central Expwy. #600, Dallas, TX 75243
3	UPI Data Cable	Jack Klinge	(303) 771-6868	5970 S. Syracuse, Suite 159, Englewood, CO 80111
3	WFMT (Chicago)	Robert Price	(800) 331-4806 (918) 665-6690	3801 S. Sheridan Road, Tulsa, OK 74145
6	StarShip Contemporary	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
6	StarShip Country	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
6	StarShip Comedy	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
6	StarShip '50s & '60s	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
6	StarShip Big Bands	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
7	ESPN	Roger Williams	(212) 661-6040	355 Lexington Ave., New York, Ny 10017
7	ESPN Affiliate Informational Network	Roger Williams	(212) 661-6040	355 Lexington Ave., New York, NY 10017
8	StarShip Jazz	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74139

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8	Genesis Cable Storytime	Arthur Doerksen	(204) 949-1581	1036-167 Lombard Ave., Winnipeg, MB 23B OV3
8	Love Sounds	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74139
8	StarShip Easy Listening	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74139
16	Home Theatre Network	Jerry Smith	(203) 965-6074	41 Harbor Plaza Drive, Stamford, CT 06904

SATCOM F3 V.B.I. AUXILIARY SERVICES

Tr. #	Service	Contact		Address
6	AP Newscable	Greg Groce	(202) 955-7213	1825 K Street NW, Washington, DC 20006
6	Dow Jones Cable News	Dick Stickney	(609) 452-2000	Box 300, Princeton, NJ 08450
6	Reuter News-View	Kurt Hansen	(212) 732-2400	2 Wall Street, New York, NY 10005
6	SSS CableText	Stephen Taylor	(404) 949-6600	3530 Bomar Road, Douglasville, GA 30135

COMSTAR D4 MAIN SERVICES

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8	ON TV (West) (s)	Nancy Held	(619) 485-9300	16935 W. Bernardo, Rancho Bernardo, CA 92127
13	SelecTV	Ken Karpman	(213) 827-4400	4755 Alla Road, Marina del Rey, CA 92091
18	Country Music Television	Jim Cavazzini	(212) 686-4340	30 East 40th Street Suite 507, New York, NY 10016
20	The Playboy Channel	Geralyn Delaney	(516) 364-2222	100 Crossways Park West, Woodbury, NY 11791
22	ON TV (East) (s)	Nancy Held	(619) 485-9300	16935 W. Bernardo, Rancho Bernardo, CA 92127

WESTAR 5 MAIN SERVICES

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2	The University Network	Joe Cortes	(213) 246-8124	1501 South Glendale Ave., Glendale, CA 91203
20	Computer Addressable TV Systems (CATS)	Debra Lieberman	(212) 888-1770	850 Third Avenue, New York, NY 10022
24	Fantasy Unrestricted Network (FUN) (s)	Betty Rodgers	(408) 559-8812	2901 Almaden Expwy., San Jose, CA 92125

SATCOM F4 MAIN SERVICES

Tr. #	Service	Contact		Address
2	Bravo	Myrna Rose	(516) 364-2222	100 Crossways Park, Woodbury, NY 11797
7	NCN-National Christian Network	Ray Kassis	(305) 632-1000	1150 West King Street, Cocoa, FL 39222
7	The Prime of Life Network	Don Dekoker	(615) 242-1567	609 Merritt St., Nashville, TN 37203
10	American Movie Classics	Myrna Rose	(516) 364-2222	100 Crossways Park, Woodbury, NY 11797
12	Pacific Cable Network	Peter O'Neil	(818) 848-5745	2921 West Alameda, Los Angeles, CA 91505
19	WPIX (New York)	Robert Price	(800) 331-4806 (918) 665-6690	3801 South Sheridan Road, Tulsa, OK 74145
21	KTVT (Dallas)	Robert Price	(800) 331-4806 (918) 665-6690	3801 South Sheridan Road, Tulsa, OK 74145
23	Santa Fe Communications	Sam Starr	(213) 395-6789	P.O. Box 3250, 3833 Ebony Street, Ontario, CA 91761

SATCOM F4 SUBCARRIER SERVICES

Tr. #	Service	Contact		Address
3	In Touch	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
3	Nationality Broadcasting Network	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
3	StarShip Rhythm & Blues	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
3	StarShip Rock	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
3	StarShip Classical	Phyllis Vetters	(918) 481-0881	8252 South Harvard, Tulsa, OK 74137
3	SPN-Satellite Program Network	Ray Klinge	(918) 481-0881	P.O. Box 702160, Tulsa, OK 74170
7	Sheridan Broadcasting Network	Phyllis Ervin	(412) 281-6751	1811 Blvd. of the Allies, Pittsburgh, PA 15219
17	Satellite Jazz Network	Saul Levine	(213) 475-8525	10880 Wilshire Blvd., Los Angeles, CA 90024

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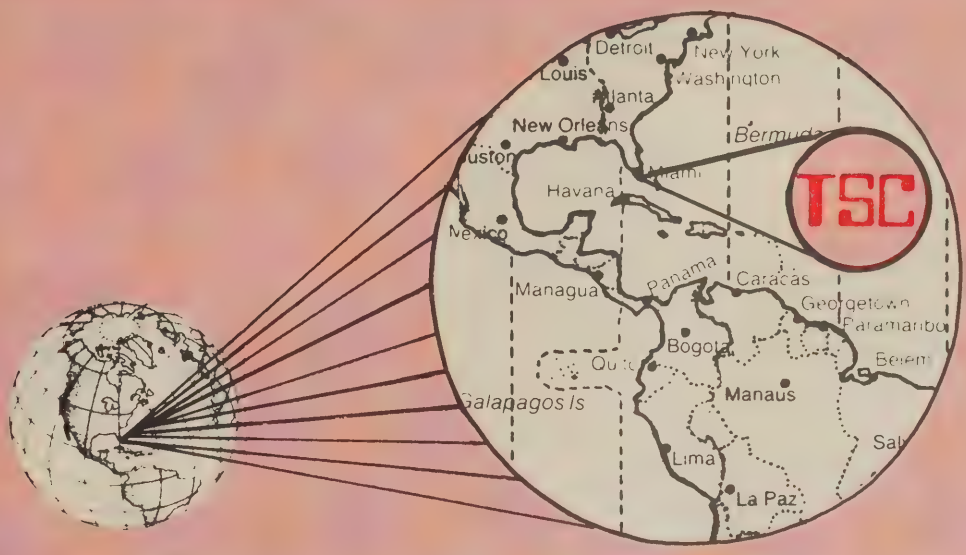

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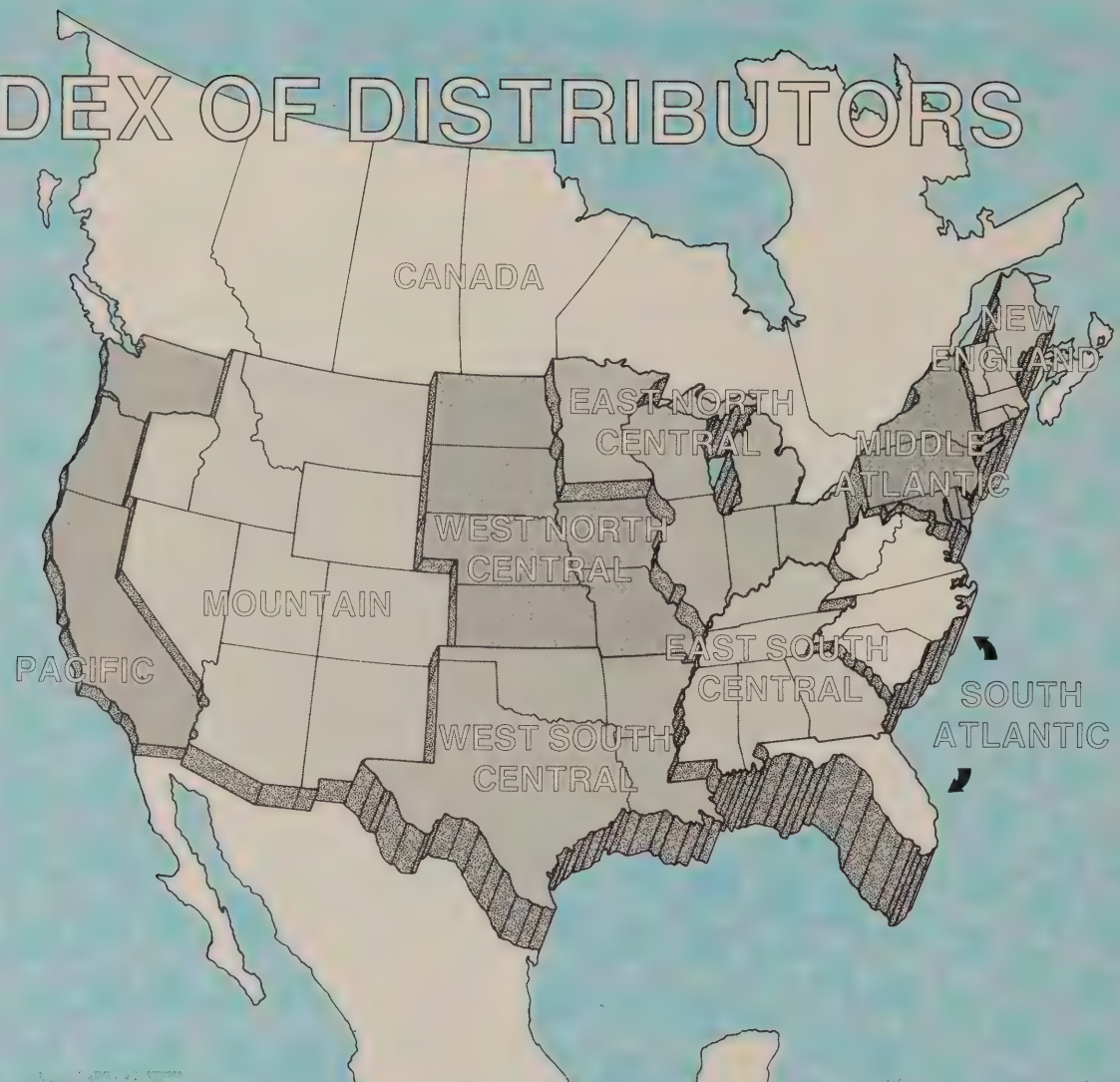

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Yonkers, NY 10704
(914) 476-2100 in NY
(800) 431-1922 - National
Product Line: **DX, Houston, Paraclipse, Skytrac, Toki,** Chaparral, Locom, Luxor, MTI
Contact: Richard Greer

Cornell Energy Systems
Box 169, Rt. #3
Williamstown, NY 13493
(315) 964-2216
(800) 448-1208
Product Line: **Paraclipse,** Automation Techniques, Chaparral, DX, Eclipse, Gillaspie, Hastings, Locom, Luxor, MTI, Odom
Contact: Mike DeWein

Courtney Lock and Hardware
2242 Jerome Ave.
Bronx, NY 10453
(212) 733-1261
(914) 638-3461
Product Line: **Arunta, Conifer, Lowrance, Norsat, Paraclipse, Phantom, U.P. Dish, Uniden,** Amplica, California Amplifier, Chaparral, DX, ECI, Jerrold, Luxor, MTI, Toki.
Contact: Chuch or JoAnne Zipser

Cumberland Electronics
642 South 20th
Harrisburg, PA 17105
(717) 233-5883
Product Line: Chaparral, Houston, KLM, Luxor, Prodelin, Winegard
Contact: Robert Clave

Digital Satellite Corporation
144 High Ave.
Nyack, NY 10960
(914) 353-1606
Product Line: **California Amplifier, Chaparral, Dexcel, Luxor, MTI, Magnum Microwave, Stardish, Wilson,** Drake, Paraclipse, Toki, USS/Maspro
Contact: Ira Roffel

Finger Lakes Communication Company, Inc.
193 Clark St.
Auburn, NY 13021
(315) 252-3151
Product Line: Automation Techniques, Locom, Odom, Skywalker
Contact: Joe Fronczek

General Satellite Corporation
3075 Erwin Plaza
Oceanside, NY 11572
(516) 766-4871
Product Line: Andrew, Arunta, Electrohome, Gardiner, Gensat, ICM, NEC, Triangle
Contact: Herb Klein

National Satellite Communications
21st Century Park
Clifton Park, NY 12065
(518) 383-2211
(800) 833-4485
Product Line: **ADM, Avantek, Avcom, Chaparral, Cosima, DX, Drake, Earth Terminals, Houston, Janeil, Odom, Paraclipse, STS,** Automation Techniques, Belden, California Amplifier, Gillaspie, Kaul-Tronics, Lowrance, Microwave Filter, Vector
Contacts: Sally DiDonato, Mary Mason

Satellite Video Services
RR #1, Box 85-S
Paul Saxe Rd.
Catskill, NY 12414
(518) 678-9581
317 E. Pleasant Valley Rd.
Altoona, PA 16602
(814) 942-5003
(800) 242-3860 PA only
Product Line: **Uniden, Kent Research,** Chaparral, Commander, Conifer, Draco, Intersat, KLM, Luxor, M/A-Com, MTI, Micona, OmniSpectra, Prodelin, Scientific-Atlanta, Wilson, Winegard
Contact: Susan Weller

Satellite Video Services
317 E. Pleasant Valley Rd.
Altoona, PA 16602
(814) 942-5003
(800) 242-3860 PA only
Product Line: **Uniden, Kent Research,** Chaparral, Commander, Conifer, Draco, Intersat, KLM, Luxor, M/A-Com, MTI, Micona, OmniSpectra, Prodelin, Scientific-Atlanta, Wilson, Winegard
Contact: Sales Dept.

Skyview Satellite Systems, Inc.
1445 Ford Rd.
Bensalem, PA 19020
(215) 638-4400 or
(800) 523-6570
Product Line: **California Amplifier, Comtech, Gillaspie, HomeCable, Northwest Satellite Labs, Orion, Satellite Ground Components, Superwinch, Unlimited Fiberglass,** Chaparral, Dexcel, General Instrument, Luxor, MTI
Contact: Harris Schulman

StarTrak Satellite Systems
Lamplighter Plaza, P.O. Box 349
Kulpsville, PA 19443
(215) 368-2800
(800) 523-2797
Product Line: **Conifer, General Instrument, Micona, Winegard, Wilson,** Andrew, Chaparral, DX, Jerrold, Luly, Luxor, M/A-Com
Contact: Blair A. Gilbert, Scott A. Gilbert, Gary Heinel

Triton Marketing
679 Remsen Ave.
Brooklyn, NY 11236
(800) 221-6535
Product Line: **Eclipse, Continental TDF/Hytek,** Arunta, Danex, Gillaspie, Sat-tec
Contact: Barbara Crinnian

Sun Satellite Systems
905 East Cumberland St.
Lebanon, PA 17042
(717) 272-2064
Product Line: **Intersat, Janeil, MSE, MTI, Uniden,** Drake
Contact: Larry Walton

WEST NORTH CENTRAL

Digital Satellite Corporation
1601 North 4th St.
Fairfield, IA 52556
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2355 South Edwards
Wichita, KS 67213
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Contact: Ira Roffel

FOCII Antenna Systems
2730 SW 57th St.
Topeka, KS 66609
(913) 862-2703
Product Line: **California Amplifier, Focii, Toki,** Chaparral
Contact: Joe Togish, Kipp Noe

Halvorson Distributing Inc.
407 Broadway
Yankton, SD 57078
(605) 665-1240
Product Line: **Anderson Scientific, Chaparral, Hastings, Quadralite,** Automation Techniques, Eclipse, Locom
Contact: Helge Halvorson

Hawkeye Satellite by Mark IV Fiberglass
15445 Metcalf
Stanley, KS 66223
(913) 681-8250
(800) 255-0050
Product Line: **Hawkeye, MTI**
Contact: John Weber

Johnson Enterprises
P.O. Box 689
Jamestown, ND 58401
(701) 252-1431
Product Line: **Accutracker, Kaul-tronics, Selectview,** DH, KLM, Newton, USS/Maspro
Contact: Walter Johnson Jr.

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P.O. Box 152
Viborg, SD 57070
(605) 327-3503
Product Line: Boman, California Amplifier, Dexcel, Drake, Ranger, Skytouch, Starfinder, Universal, Wilson
Contact: Dallas Long

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804 East 11th
Rock Falls, IL 61071
(815) 626-5800
Product Lines: Arc-Finder, Chaparral, Gould/Dexcel, Houston, Maxi-Vue, Raydx, USS/Maspro, Uniden
Contact: Sales Dept.

Omax Electronics
Box 235
Boy's Town, NB 68010
(402) 551-7577
Product Line: Sat-tec, Semco, Selectrak, Selectview, Xtra-Link
Contact: David Halperin

Satellite Communications Corp.
304 Railroad, P.O. Box 158
Silver Lake, KS 66539
(913) 582-5819
Product Line: **Boman, KLM, USS/Maspro, Norsat, Polaris, RTM, Satcom**, Astron, Automation Techniques, Chaparral
Contact: William Berry,
Larry Swanson

Satellite Engineering Group
3127 Belmont
Kansas City, MO 64129
(816) 921-1555 / (816) 921-1557
Product Line: **Automation Techniques, Burr, Gardiner, Houston, Sat-Trol,** Blonder-Tonque, Omni-Spectra, Pico, Sat-Pak
Contact: Arthur Liebenthal

The Satellite Store
P.O. Box 118
Ottertail, MN 56571
(218) 367-2303
Product Lines: Cosima, Hytek, Norsat, Regency, STS
Contact: Jim Bucholtz

Satellite Supply & Mfg., Inc.
940 Military
Baxter Springs, KS 66713
(800) 223-8532
(316) 856-2379
Product Line: **TDF/Hytek, Wilson**
Contact: Don Phelps

Satellite Video Systems
7520 Washington
Kansas City, MO 64114
(816) 333-0315
Product Line: Arunta, Automation Techniques, Avcom, Blonder--Tongue, California Amplifier, Chaparral, DH, DX, Dexcel, Drake, Houston, IMI, Luxor, MSE, NEC, Odom, PCM, Pico, Prodelin, Pro-Sat, Scientific-Atlanta, Super Satellite Cable, Toki, Winegard
Contact: Doug Smith
Roger Fowler

Skywalker Communications
1369 Josephville, Rd.
Wentzville, MO 63385
(314) 327-7011
(800) 351-9006
Product Line: California Amplifier, Chaparral, KLM, Skywalker, Vu Mor
Contact: Roger Criebaum

Valley Products Corporation
P.O. Box 668
Valley, NE 68064
(402) 359-5500
Product Line: Dexcel, KLM, Luxor, MTI, Sat-tec, Semco, Selectrak, Selectview, Xtra-Link
Contact: David Halperin

Vast Satellite, Inc.
6015 State Hwy. #7
St. Louis Park, MN 55416
(800) 321-3812
(612) 920-1446
Product Line: Conifer, General Instrument, Hawkeye
Contact: Tim Beebe

Warren Supply Company
P.O. Box 1128
300 E. 50th St. N.
Sioux Falls, SD 57104-1128
(605) 336-1830
Product Line: **Luxor, M/A-Com, MTI,** Dexcel, Drake, General Instrument, Intersat, Omni-Spectra, Regency, STS
Contact: Russ Cramer
Ralph Warren

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Andrews Electronics
439 Warwood Ave.
Wheeling, WV 26003
(304) 277-4600
Contact: David Bingman
RR 1, Box 187
Shinnston, WV 26431
(304) 592-5443
Contact: Sales Department
Product Line: Apollo, Chaparral, Drake, Janeil, Laux, Starbeam, Uniden, Wilson

AVSAT Distributing, Inc.
500 B Southlake Blvd.
Richmond, VA 23236
(804) 794-8800
(800) 241-8718
Product Line: ADM, Automation Techniques, Avantek, Avcom, California Amplifier, Chaparral, DH, Hero, Kaul-Tronics, MSE, Seavey, Stardish, Tracker, Uniden, Winegard
Contact: Andy Hatfield

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Contact: Wayne Price

National Satellite Communications
10779 Satellite Blvd.
Orlando, FL 32821
(305) 851-4738
Product Line: **ADM, Avantek, Avcom, Chaparral, Cosima, DX, Drake, Earth Terminals, Houston, Janeil, Odom, Paraclipse, STS,** Automation Techniques, Belden, California Amplifier, Gillaspie, Kaul-Tronics, Lowrance, Microwave Filter, Vector
Contact: Kevin Neicarek

Precision Satellite Systems
715 Grove St.
Clearwater, FL 35515
(813) 441-9438 / (800) HOT-DISH
Product Line: **M/A-Com, MSL, MTI, Merrimac, Wilson,** Chaparral, Coax-Seal, Focal Finder, Hero, Houston, One Run, Paladin, Precision, Ranger, Satellite Ground Components, Search Free, SpaceVision, Uniden
Contact: John Peters

Quarles Satellite Systems
1616 Calhoun Rd.
Greenwood, SC 29646
(800) 845-6952
(800) 922-9704
Product Line: **Houston, Janeil, KLM, Luxor,** Chaparral, Conifer, DX, Dexcel, Paraclipse, Prodelin
Contact: Jim Staney, Bill Quarles

STS South, Inc.
210 NW 10th Ave.
Gainesville, FL 32601
(904) 371-7090
Contact: Leonard Carr
P.O. Box 668, Hwy. #76
Sandy Springs, SC 29677
(803) 261-8209
Contact: Bob Hamburg
Bruce Rollin
Product Line: **Chaparral, Conifer, Cosima, Laux, Lowrance, M/A-Com, MTI, Omni-Spectra, Prodelin, STS, SpaceVision, Uniden, Winegard**

Satellite Technology Inc.
11731 South Dixie Hwy.
Miami, FL 33156
(305) 232-0145
(800) 432-1137
Product Line: California Amplifier, DX, General Instrument, Paraclipse,
Prodelin, Sat-tec, Avantek, Chaparral, Dexcel, Drake, Houston, Luly, Scientific-Atlanta
Contact: John Sablio
Charles Gerbing

Skyhigh Satellite Distributors
1492 Hwy. 17 North
Mt. Pleasant, SC 29464
(803) 884-8673
Product Line: Amplica, Arunta, Paraclipse
Contact: Marilyn or Sam Gasque, or John Thomas

Southeast Satellite
U.S. 1 North, Tall Pines Industrial Park
St. Augustine, FL 32084
(800) 824-DISH
(800) 824-3300
Product Line: **KLM, Luxor,** Avcom, Avantek, Channel Master, Chaparral, Comm/Scope, Dexcel, Drake, Gould, Houston, M/A-Com, MTI, Prodelin, Scientific-Atlanta
Contact: Robert K. Davis Jr.

Star Tech Inc.
29 Hammit Ln.
Salem, VA 24153
(703) 387-0062 / (800) 221-4656
Product Line: **M/A-Com,** Amplica, Chaparral, General Instrument, Prodelin
Contact: Richard Goodwin,

Star Tech Inc.
Hwy. 70 West
Garner, NC 27529
(919) 779-0273 / (800) 362-6154
Product Line: **M/A-Com,** Amplica, Chaparral, General Instrument, Prodelin
Contact: Bob Winstead

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1515 Shenandoah Ave.
Front Royal, VA 22630
(703) 636-1777
Product Line: **Aristocom, Blonder-Tongue, Boman, Continental, DX, Gentek, Locom, MSE, Micona, Panasonic, Seavey,** Drake, Wilson
Contact: Peyton Johnson

TSC Communication Systems Inc.
9812 S. Dixie Hwy.
(305) 662-2020, 662-6046
(800) 327-7272

TSC North
6826 NW 169th St.
(305) 821-4002
Miami, FL 33156
Product Line: **Continental, Houston,,** ADM, Arunta, Conifer, Eclipse, MTI, National Microtech, Odom, Paraclipse, Sat-Pak
Contact: Mohammed Usman

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American Microcom Systems
2509 Russellville Rd.
Bowling Green, KY 42101
(800) 452-3058, outside KY
(800) 554-3464
(502) 782-7518
Product Line: **California Amplifier, Chaparral, Cincinnati Fiberglass, DH, Drake, Gardiner, Houston, Nemal, Unlimited Fiberglass**
Contacts: Pat Casdorph,
Mike Casdorph

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Botel Rd.
Savannah, TN 38372
(901) 925-3000
Product Line: Automation Techniques, Avcom, California Amplifier, Drake, Gentek, Houston, Janeil, MSE, Pro-Sat, Sat-tec, Skywalker, Southern Spun, Stardish, Uniden, Universal, Winegard
Contact: Johnny Bellis, Gene Wood

Best Reception Systems
Route 4, Box 265
Rockwood, TN 37854
(615) 354-2999

Product Line: **Continental, Draco, USS/Maspro**, Chaparral, Gillaspie, Houston, M/A-Com, Mitsubishi, Seavey, SpaceVision, TDF/Hytek, Vista, Wilson
Contact: Jeff Crabtree

Cayson Electronics, Inc.
Rt. 3, Box 160
Fulton, MS 38843
(601) 862-2132
Product Line: Automation Techniques, Boman, Cayson, Centurion, Chaparral, Gillaspie, Hammerblow, Luxor, Maxum, Toki
Contact: Royce Cayson

Cox Enterprises
RR 4, Box 280
Rockwood, TN 37854
(615) 354-3471
Product Line: California Amplifier, Draco, Seavey, Wilson
Contact: Tom Cox

Echosphere East
10536 Lexington Dr.
Knoxville, TN 37922
(615) 966-4114 / (800) 223-1507
Product Line: **ADM, Anderson Scientific, Arunta, Automation Techniques, Avantek, Avcom, Blonder-Tongue, California Amplifier, Chaparral, DH, DX, Danex, Dexcel, Drake, Echo Cable, Houston, Hydroform, Janeil, KLM, M/A-Com, MTI, Newton, Nexus, Odom, Paraclipse, Pico, Prodelin, Ranger, Raydx, Regency, STS, Satellite Ground Components, Sat-tec, Stardish, Toki, USS/Maspro, Wilson,** Amphenol, Boman, Davis, Dish Set, Marshall, Microwave Filter, Newark, Norsat, Omni-Spectra, PCM, Precision, Satalarm, Times Fiber, UHF Associates, VideoTech, Weather Wall, Xtra-Link
Contact: Dave Thomas

Kelgo International Ltd.
6395 McDonough Dr.
Norcross, GA 30093
(404) 447-9450
Product Line: **Avantek**, Cayson, Continental, Drake, Gillaspie, KLM
Contact: Danny DeMaeyer
Kevin Goff

Lewis Electronics
P.O. Box 100
West Elm St.
Humboldt, TN 38343
(901) 784-2191
Product Line: **Eclipse, Janeil, KLM, Regency, Sat-tec**, Automation Techniques, Avantek, Beddingfield, Burr, California Amplifier, Drake, Earth Terminals, General Instrument, Gillaspie, HomeCable, Locom, M/A-Com, TDF/Hytek, Vector, Winegard
Contact: Sharon Williams

MSA Incorporated
P.O. Box 2085
1520 Ft. Campbell Blvd.
Clarksville, TN 37042-2085
(615) 552-8002
(615) 647-6221
Product Lines: Automation Techniques, Avantek, California Amplifier, Chaparral, Drake, MTI, Paraclipse
Contact: Mike Maples
Rick Kozen

Multivision Inc.
331 Oak Ridge Turnpike
Oak Ridge, TN 37830
(800) 351-3000
Product Line: Automation Techniques, Avantek, Avcom, California Amplifier, Chaparral, Drake, Eclipse, Gillaspie, KLM, Laux, Luxor, MTI, Polaris, Sat-tec, Wilson
Contact: Alan Beauchamp

Nashville Satellite Electronics
824 Gale Ln.
Nashville, TN 37204
(800) 322-2900
(800) 322-2950, in TN
Product Line: **Blonder-Tongue,** Arunta, Drake, MTI, Merrimac, Paraclipse
Contact: Jerry Miller

National Micro-Dynamics Inc.
6153 Airways Blvd.
Chattanooga, TN 37421
(615) 892-3901 / (800) 845-0813
Product Line: **Arunta, California Amplifier, Laux, Sat-tec, SVS, Zeus**, Astron, Chaparral, Gillaspie, Intersat, Luxor, Unlimited Fiberglass, U.P. Dish, Wilson
Contact: Hal Farren

National Microtech
P.O. Drawer E
Grenada, MS 38901
(800) 647-6144
Product Line: **Apollo, Automation Techniques, Bearcat, Drake, Electrohome, Kaul-Tronics, Locom, Luxor, M/A-Com, Paraclipse, STS,** Toki, Uniden, Winegard Sat-tec
Contact: Bill Spark

PDQ Satellite Products Inc.
1108 Harpeth Industrial Ct.
Franklin, TN 37064
(800) 238-3232 / (615) 791-1241
Product Line: Automation Techniques, Avantek, Blonder-Tongue, California Amplifier, Chaparral, Houston, KLM, Laux, Luxor, MTI, Microwave Filter, Paraclipse, Sat-Pak, Sat-tec, Seavey, Tel-Vi, Transtar
Contact: Tommy Cozart

Pegasus Satellite Technologies
1865 Airlane Dr., Suite 4
Nashville, TV 37210
(615) 889-3345
(800) 621-TVRO (in TN9
(800) 522-TVRO National
Product Lines: **Alumtech, Laux, Luxor,** Avantek, Bearcat, Boman, Chaparral, Continental, DH, Drake, Gould/Dexcel, Houston, Janeil, M/A-Com, MSE, MTI, Magnum, Maxum, STS, Toki
Contact: Bob Newcomer
Miriam Trahan
Ben Bowden

Wright Technology Mktg.
200 Wisteria Dr.
Hattiesburg, MS 39401
(601) 545-2545
Product Line: Automation Techniques, Avcom, California Amplifier, Chaparral, DH, Houston, Skywalker, Stardish, Transifier, Universal Winegard
Contacts: Orby Wright
Ed Edwards

WEST SOUTH CENTRAL

Delstar Systems, Inc.
7800 Bissonnet, Suite 200
Houston, TX 77074
(713) 776-0542
Contact: Mark Kraemer
Stephanie Moran

4418 Centergate
San Antonio, TX 78217
(512) 650-9575
Contact: Lance Billman
Martin Florez
Product Line: **Avantek, Blonder-Tongue, Bearcat, Chaparral, DH, Delcable, Fanon Courier, Houston, MSL, Odom, Quik-Rok, Raydx, STS, Satellite Ground Components, Satellite Relay,** Drake, DX, Luxor, Stardish, Toki

Digital Satellite Corporation
7123 Interstate 30, Suite 14
Little Rock, AR 72209
(516) 565-8443
Product Line: **California Amplifier, Chaparral, Dexcel, Luxor, MTI, Magnum Microwave, Stardish, Wilson,** Drake, Paraclipse, Toki, USS/Maspro
Contact: Claude Moore

Donley International Inc.
5702 D West 34th St.
Houston, TX 77092
(713) 956-2984
Product Line: Burr, CADCO, California Amplifier, Chaparral, Comm/Scope, DX, Eagle, Gensat, Jerrold, LRC, M/A-Com, Merrimac, Miralite, Triple Crown
Contact: Bill Simonite
Wally Briscoe
J.D. Thomas

Dulaney's
100 NW 44th
Oklahoma City, OK 73118
(405) 528-0511
Product Line: Chaparral, Cosima, Drake, Houston, Locom, Paraclipse, STS, Skywalker, Vidare, Wilson
Contact: Jim Parker

Echosphere Southwest
3901 La Reunion Parkway, Bldg. #15
Dallas, TX 75212
(214) 630-8625 in Texas
(800) 521-9282 National
Product Line: **ADM, Anderson Scientific, Arunta, Automation Techniques, Avantek, Avcom, Blonder-Tongue, California Amplifier, Chaparral, DH, DX, Danex, Dexcel, Drake, Echo Cable, Houston, Hydro-form, Janeil, KLM, M/A-Com, MTI, Newton, Nexus, Odom, Paraclipse, Pico, Prodelin, Ranger, Raydx, Regency, STS, Satellite Ground Components, Sat-tec, Stardish, Toki, USS/Maspro, Wilson,** Amphenol, Boman, Davis, Dish Set, Marshall, Microwave Filter, Newark, Norsat, Omni-Spectra, PCM, Precision, Satalarm, Times Fiber, UHF Associates, VideoTech, Weather Wall, Xtra-Link
Contact: Steve Schaver

Innovative Electronics
P.O. Box 287
Berryville, AR 72616
(501) 423-6949
Product Line: **Janeil, Luxor, M/A-Com, Prodelin, Regency, USS/Maspro, MTI**
Contact: Steve Gassaway

International Video Communications (IVC)
4005 Landski Dr.
North Little Rock, AR 72118
(501) 771-2800
(800) 643-5427
Product Line: **DX, Panasonic, Paraclipse, Phenix, Toki,** Chaparral, Drake, Houston, KLM, JVC, Kloss, Luxor, MTI, Odom,
Sat-Pak, Tweaker, Wilson
Contact: Don Chastek

Jo' Mil Electronics
P.O. Box 2778
Rt. 6, Box 17JM
Covington, LA 70434
(504) 893-4514
(800) 654-9144
Product Line: Avantek, Bearcat, Chaparral, Continental, DX, Dexcel, Drake, Houston, Janeil, Luxor, MTI, STS, Toki
Contact: Deb LeStelle

MT Distributing, Inc.
P.O. Box 798
Gainesville, TX 76240
(817) 665-1661
Product Line: Drake, Houston, Janeil, Luxor, MTI, Paraclipse, Prodelin, USS/Maspro
Contact: Michael T. Orsburn

Nampa Satellite Systems
6012 W. 34th St.
Houston, TX 70092
(713) 957-5140
Product Line: **Boman, California Amplifier, Dexcel, Drake, Ranger, Skytouch, Starfinder, Universal, Wilson**
Contact: Bob King

Odom Antenna, Inc.
P.O. Box 1017
Beebe, AR 72012
(501) 882-6485
(800) 643-2950
Product Line: **Anderson Scientific, Houston, MTI,** Automation Techniques, Chaparral, Drake, Luxor, STS, Toki, Uniden
Contact: Sales Department

P.C.M., Inc.
3700 N. Harold
N. Little Rock, AR 72118
(501) 753-5715
Product Line: **Eclipse, KLM,** Amplica, Chaparral, Dexcel, Luxor
Contact: Lon Sheridan

Professional Electronic Distributors
5850 49th
Lubbock, TX 79414
(800) 858-4611 / (800) 692-4343
Product Line: Drake, Luxor, M/A-Com, MTI, Prodelin, Sat-tec
Contact: Steve James
Roger Williams

Satellite Earth Stations
P.O. Box 160
Mamou, LA 70554
(800) 762-2110 / (800) 252-3307
1106 Smith Rd., Suite 101
Austin, TX 78721
(512) 385-0738
(800) 252-3457 in TX
Product Line: Avantek, Chaparral, DX, Dexcel, Houston, Janeil, Luxor, MTI, STS, Toki
Contact: Sales Department

Satellite Video Distributors Inc.
P.O. Box 1545, 1005-A E. Hwy. 83
McAllen, TX 78501
(512) 682-4501
Product Line: **Houston,** Amphenol, Automation Techniques, Avcom, Belden, Cambridge, Chaparral, MTI, Satellite Ground Components, Stardish, Superwinch, Winegard
Contact Bill Wylds

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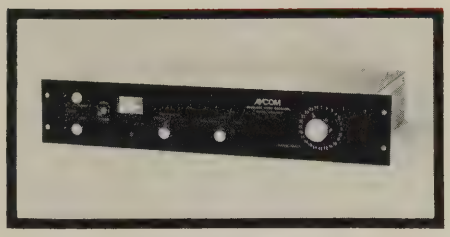

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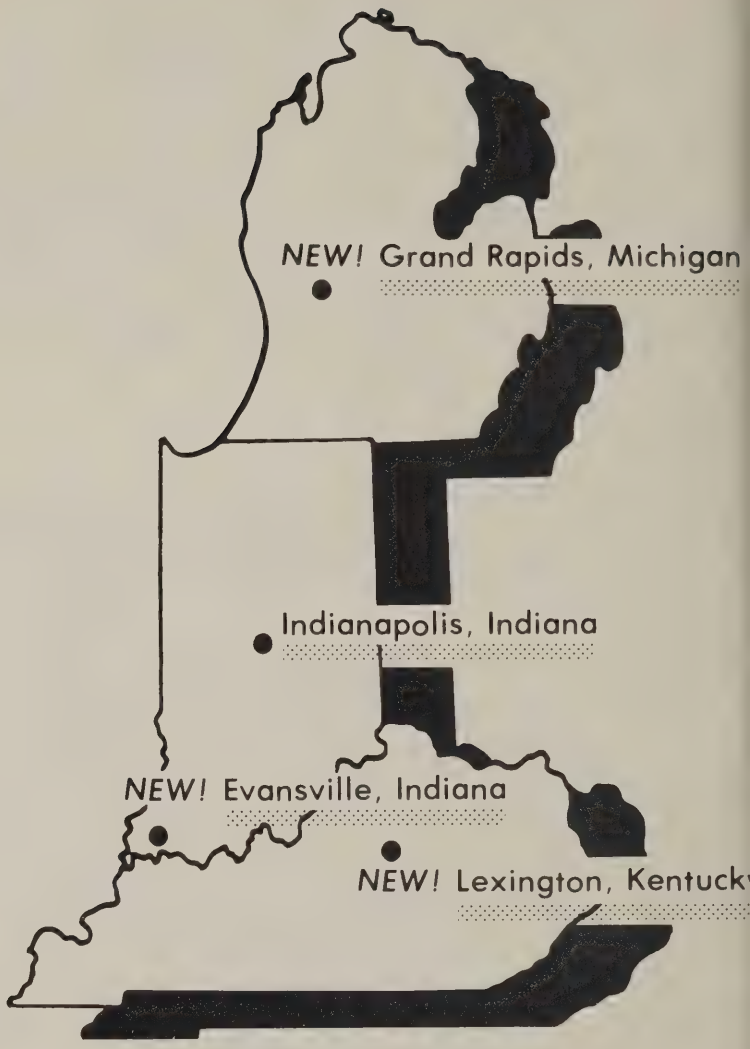

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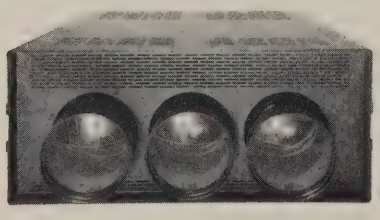

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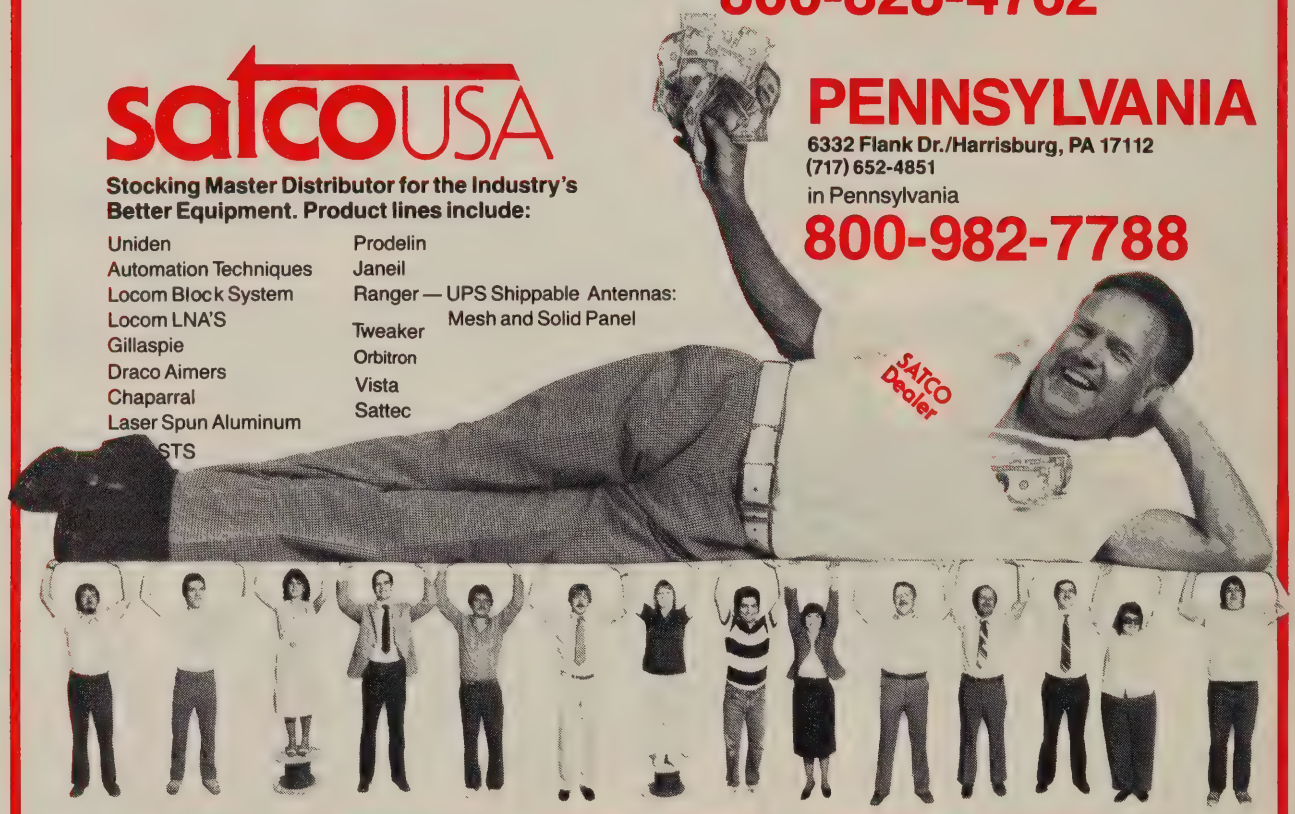

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9 Advanced Technical Installation, Catskill, New York. Contact: Susan Weller, Satellite Video Services, (518)678-9581.
14 – 15 Satellite Technology for the Non-Technical Manager, Los Angeles, California. Contact: Janet Graham, Phillips Publishing, (301)986-0666.
16 Luxor Drive and Receivers—Installation, Operation, Programing, and Troubleshooting, Catskill, New York. Contact: Susan Weller, Satellite Video Services, (518)678-9581.
19 Basic Installation Training, Catskill, New York. Contact: Susan Weller, Satellite Video Services, (518)678-9581.
23 Block Conversion—SMATV Theory, Practical Application, and Signal Distribution, Catskill, New York. Contact: Susan Weller, Satellite Video Services, (518)678-9581.
27 – 30 Teleconferencing in Business: Applications and Strategies, Tucson, Arizona. Contact: Diane Chalgren, (608)262-2831.
28 – 29 Finding Telecommunications Information, Burlingame, California. Contact: Christopher Sterling, (202)676-8243.
30 Intersat IQ 160 Technical Training, Catskill, New York. Contact: Susan Weller, Satellite Video Services, (518)678-9581.

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20-22 Installers School, Reno, Nevada. Contact: Dale, Satellite Electronics International, (702)329-6611. Minimum class size is eight, advance registration is necessary.
25 – 28 MexCom 85: First Mexico International Computer Exhibition and Technical Conference, Mexico City, Mexico. Contact: Bill Warnes, (703)685-0600.
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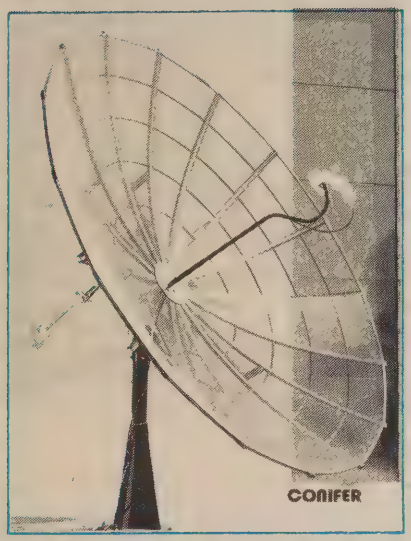

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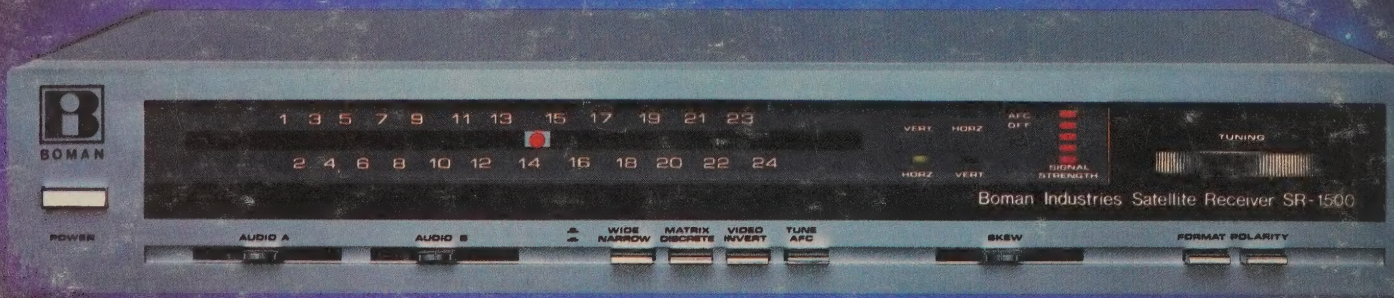

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